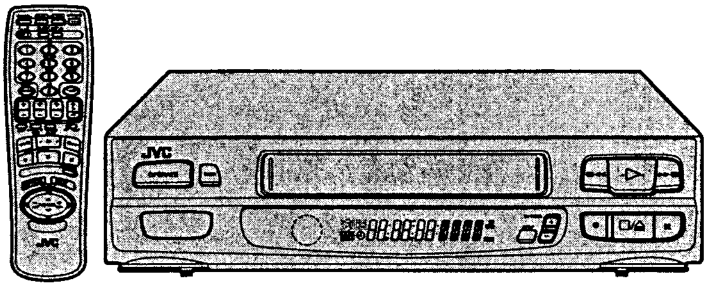
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-A230E/A233E/A237E



ShowView

VHS
PAL

Regarding service information other than these sections, refer to the HR-J238E service manual (No. 82530). Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS

GENERAL

Power requirement : AC 220 – 240 V∿ , 50/60 Hz
Power consumption : 20 W
Temperature
 Operating : 5°C to 40°C
 Storage : –20°C to 60°C
Operating position : Horizontal only
Dimensions (W x H x D) : 400 x 94 x 338 mm
Weight : 4.3 kg
Format : VHS PAL standard
Maximum recording time
 (SP) : 240 min. with E-240 video cassette

VIDEO/AUDIO

Signal system : PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system : Rotary two-head helical scan system
Signal-to-noise ratio : 45 dB
Horizontal resolution : 250 lines
Frequency range : 70 Hz to 10,000 Hz
Input/Output : [A230E]
 21-pin SCART connector x 1 (IN/OUT x 1)
 [A237E]
 21-pin SCART connector x 2 (IN/OUT x 1, IN x 1)
 [A233E]
 21-pin SCART connector x 2 (IN/OUT x 1, IN/DECODER x 1)

TUNER/TIMER

TV channel storage capacity : 99 positions (+AUX position "AU")
Tuning system : Frequency synthesized tuner
Channel coverage : VHF 47 – 89/104 – 300/302 – 470MHz
 UHF 470 – 862MHz
Aerial output : UHF channel 36 (Adjustable 32 – 40)
Memory backup time : Approx. 3 min.

ACCESSORIES

Provided accessories : RF cable,
 Infrared remote control unit,
 "R6" battery x 2

Specifications shown are for SP mode unless otherwise specified. E.& O. E. Design and specifications subject to change without notice.

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The following table indicate different points between models HR-A230E, HR-A233E and HR-A237E .

ITEM \ MODEL	HR-A230E	HR-A233E	HR-A237E
Show View	–	○	○
AV2 IN/DECODER CONNECTOR	–	○	–
AV2 IN CONNECTOR	–	○	–
AV SELECT SWITCH	–	–	○
PDC/VPS	–	–	○

Notes :
- Mark ○ is used.
- Mark – is not used.

The following table indicate different parts number between models HR-J238E, HR-A230E, HR-A233E and HR-A237E .

PACKING AND ACCESSORY ASSEMBLY<M1>

REF. NO	ITEM \ MODEL	HR-J238E	HR-A230E	HR-A233E	HR-A237E
101	PACKING CASE	PQ35532-11	PQ35532-15	PQ35532-17	PQ35532-19
102	CUSHION ASSEMBLY	PQ35533A-1	PQ35533B-2	←	←
⚠ 106	REMOTE CONTROLLER	PQ21953A-3	PQ21953F-3	←	←
⚠ 110	INSTRUCTIONS	PU30425-1808	–	–	–
⚠	INSTRUCTIONS (ENGLISH)	–	PU30425-1847-1	←	←
⚠	INSTRUCTIONS (GERMANY)	–	PU30425-1848-1	←	←
⚠	INSTRUCTIONS (FRENCH)	–	PU30425-1849-1	←	←
⚠	INSTRUCTIONS (ITALIAN)	–	PU30425-1850-1	←	←
⚠	INSTRUCTIONS (SPANISH)	–	PU30425-1851-1	←	←
⚠	INSTRUCTIONS (DUTCH)	–	PU30425-1852-1	←	←
⚠	INSTRUCTIONS (DANISH)	–	PU30425-1853-1	←	←
⚠	INSTRUCTIONS (FINNISH)	–	PU30425-1854-1	←	←
⚠	INSTRUCTIONS (SWEDISH)	–	PU30425-1855-1	←	←
⚠	INSTRUCTIONS (NORWEGIAN)	–	PU30425-1856-1	←	←
⚠	INSTRUCTIONS (POLISH)	–	PU30425-1857-1	←	←
⚠	INSTRUCTIONS (GREEK)	–	PU30425-1858-1	←	←
111	POLY BAG	PQ35364-4 (×1)	PQ35364-4 (×2)	←	←
112	SHEET (SPAIN)	PQ45146-96	PQ45146-90	PQ45146-92	–
113	WARRANTY CARD	–	–	–	BT-20135
114	POLY BAG	–	–	–	PQ33909

Notes : Mark — is not used.

Mark ← is same as left.

CABINET AND CHASSIS ASSEMBLY<M2>

REF. NO	ITEM \ MODEL	HR-J238E	HR-A230E	HR-A233E	HR-A237E
150	FRONT PANEL ASSEMBLY	PQ11906G	PQPQ11889E-1	PQ11889D-1	PQ11889C-1
150A	CASSETTE DOOR	PQ21915-5	PQ21898-2	←	←
155	KNOB (SHUTTLE)	PQ35473	—	—	—
156	SHUTTLE ASSEMBLY	PEME0913	—	—	—
157	SCREW, ×3	SDSF2608Z	—	—	—
162	SCREW, MAIN	—	SDSF3010Z	←	←
WR6	WIRE, JOG	PW30218-0441613	—	—	—

MAIN BOARD ASSEMBLY<03>

REF. NO	ITEM \ MODEL	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW1	MAIN BOARD ASSEMBLY	PB10980D-01	PB10980F-01	PB10980G-01	PB10980H-01
IC706	IC	M50253P	—	—	—
IC1001	IC	BA15218N	—	—	BA15218N
IC1301	IC(OSD)	LC74783-9153	—	—	—
Q9	TRANSISTOR	DTA144WU	—	—	—
Q20	TRANSISTOR	DTA144WU	—	—	—
Q702	TRANSISTOR	DTC114WU	—	DTC114WU	—
Q956	TRANSISTOR	2SB1256	—	—	—
Q957	TRANSISTOR	DTC114TU	—	—	—
Q960	TRANSISTOR	2SB1256	—	—	2SB1256
Q1012	TRANSISTOR	2SA1576(RS)	—	—	2SA1576(RS)
Q1013	TRANSISTOR	2SA1576(RS)	—	—	2SA1576(RS)
Q1014	TRANSISTOR	DTC144WU	—	—	DTC144WU
Q1015	TRANSISTOR	DTC144WU	—	—	DTC144WU
Q1301	TRANSISTOR	2SC4081(QRS)	—	—	—
Q1302	TRANSISTOR	2SA1576(QRS)	—	—	—
Q1951	TRANSISTOR	2SA1576(QRS)	—	—	2SA1576(QRS)
Q1952	TRANSISTOR	2SA1576(QRS)	—	—	2SA1576(QRS)
D5	DIODE	1SS133	—	—	—
D10	DIODE	1SS133	—	—	—
D714	DIODE	1N4148M	—	—	—
D715	DIODE	1N4148M	—	—	—
D951	FR DIODE	AU01Z	—	—	—
D964	DIODE	11ES2	—	—	—
R53	RESISTOR	QRD161J-273	QRD161J-333	←	←
R64	RESISTOR	QRSA08J-272YN	—	—	—
R67	RESISTOR	QRSA08J-152YN	—	—	—
R231	RESISTOR	QRD161J-560	QRSA08J-0R0Y	QRSA08J-560YN	QRSA08J-0R0Y
R232	RESISTOR	QRD161J-391	—	QRSA08J-391YN	—
R304	RESISTOR	—	QRSA08J-0R0Y	—	QRSA08J-0R0Y
R335	RESISTOR	QRSA08J-103YN	—	QRD161J-103	—
R723	RESISTOR	QRSA08J-102YN	—	—	—
R728	RESISTOR	QRSA08J-271YN	—	—	QRSA08J-271YN
R736	RESISTOR	QRSA08J-472YN	—	—	—

Notes : Mark — is not used.

Mark ← is same as left.

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
R737	RESISTOR	—	QRSA08J-104YN	←	—
R750	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—
R757	RESISTOR	QRSA08J-472YN	—	—	QRSA08J-472YN
R773	RESISTOR	QRSA08J-103YN	—	—	—
R791	RESISTOR	QRSA08J-102YN	—	—	—
R792	RESISTOR	QRSA08J-271YN	—	—	QRSA08J-271YN
R809	RESISTOR	QRSA08J-222YN	—	—	—
R810	RESISTOR	QRSA08J-471YN	—	—	—
R820	RESISTOR	—	QRSA08J-104YN	—	QRSA08J-104YN
R967	RESISTOR	QRSA08J-472YN	—	—	—
R968	RESISTOR	QRSA08J-222YN	—	—	—
R978	RESISTOR	QRSA08J-472YN	—	—	QRSA08J-472YN
R979	RESISTOR	QRSA08J-222YN	—	—	QRSA08J-222YN
R1012	RESISTOR	QRSA08J-0R0Y	QRSA08J-181YN	QRSA08J-0R0Y	QRSA08J-181YN
R1016	RESISTOR	QRSA08J-102YN	QRSA08J-821YN	QRSA08J-102YN	QRSA08J-821YN
R1030	RESISTOR	QRSA08J-103YN	—	—	QRSA08J-103YN
R1036	RESISTOR	QRSA08J-103YN	—	—	QRSA08J-103YN
R1041	RESISTOR	QRSA08J-103YN	—	—	QRSA08J-103YN
R1042	RESISTOR	QRSA08J-103YN	—	—	QRSA08J-103YN
R1043	RESISTOR	QRSA08J-273YN	—	—	QRSA08J-273YN
R1044	RESISTOR	QRSA08J-273YN	—	—	QRSA08J-273YN
R1045	RESISTOR	QRSA08J-472YN	—	—	QRSA08J-472YN
R1046	RESISTOR	QRSA08J-472YN	—	—	QRSA08J-472YN
R1301	RESISTOR	QRSA08J-392YN	—	—	—
R1302	RESISTOR	QRSA08J-331YN	—	—	—
R1303	RESISTOR	QRSA08J-151YN	—	—	—
R1304	RESISTOR	QRSA08J-0R0Y	—	—	—
R1306	RESISTOR	QRSA08J-152YN	—	—	—
R1307	RESISTOR	QRSA08J-103YN	—	—	—
R1308	RESISTOR	QRSA08J-103YN	—	—	—
R1309	RESISTOR	QRSA08J-103YN	—	—	—
R1421	RESISTOR	—	—	—	QRD161J-0R0
R1951	RESISTOR	QRSA08J-333YN	—	—	QRSA08J-333YN
R1952	RESISTOR	QRSA08J-223YN	—	—	QRSA08J-223YN
R1953	RESISTOR	QRSA08J-102YN	—	—	QRSA08J-102YN
R1954	RESISTOR	QRSA08J-563YN	—	—	QRSA08J-563YN
R1955	RESISTOR	QRSA08J-103YN	—	—	QRSA08J-103YN
R1956	RESISTOR	QRSA08J-101YN	—	—	QRSA08J-101YN
C305	CAPACITOR	—	QCYA1EK-333	—	QCYA1EK-333
C719	E CAPACITOR	PU60676-223	QETN0JM-228	←	←
C955	E CAPACITOR	QEMR1EM-187	—	—	—
C1010	RESISTOR	QRSA08J-0R0Y	—	—	QRSA08J-0R0Y
C1301	E CAPACITOR	QEKJ1HM-105	—	—	—
C1302	CAPACITOR	QCTA1CH-820	—	—	—
C1303	E CAPACITOR	QEKJ1HM-105	—	—	—
C1304	CAPACITOR	QCTA1CH-560	—	—	—
C1305	E CAPACITOR	QEKJ0JM-476	—	—	—
C1306	CAPACITOR	QCYA1HK-103	—	—	—
C1307	CAPACITOR	QCSB1HJ-150	—	—	—

Notes : Mark — is not used.

Mark ← is same as left.

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
C1308	CAPACITOR	QCTA1CH-330	—	—	—
C1309	CAPACITOR	QCTA1CH-330	—	—	—
C1314	CAPACITOR	QCTA1CH-220	—	—	—
C1315	CAPACITOR	QCTA1CH-131	—	—	—
C1951	NP E CAPACITOR	QENC1EM-475	—	—	QENC1EM-475
C1952	E CAPACITOR	QETC1HM-475	—	—	QETC1HM-475
C1953	CAPACITOR	QCYA1HK-103	—	—	QCYA1HK-103
C1954	E CAPACITOR	QETC1HM-106	—	—	QETC1HM-106
L1301	COIL	PELN0530-101JZ	—	—	—
L1302	COIL	PU59152-220J	—	—	—
L1303	COIL	PU59152-220J	—	—	—
L1304	COIL	PU59152-2R2J	—	—	—
L1305	COIL	PU59152-330J	—	—	—
HD1	HOLDER	PEME0978	—	—	PEME0978
CN705	CONNECTOR, (2-5) SHUTTLE	PU59555-4	—	—	—
CN751	CONNECTOR, (1-8) PDC/ATS+	PEMC0714-008	—	—	PEMC0714-008
CN1401	CONNECTOR, TERMINAL	PEMC1168-017 (1-17)	PEMC1168-011 (7-17)	PEMC1168-017 (1-17)	PEMC1168-011 (7-17)
CN1402	CONNECTOR, TERMINAL	PEMC1168-012 (1-12)	←	←	PEMC1168-015 (1-15)

TERMINAL BOARD ASSEMBLY<06>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW1	TERMINAL BOARD ASSEMBLY	PB10984D	PB10984E-01	PB10984D-01	PB10984F-01
IC201	IC	BA7630S	—	BA7630S	—
IC601	IC	—	—	—	TC74HC4052AP
IC602	IC	BA15218	—	BA15218	—
IC603	IC	BA7631	—	BA7631	—
Q204	TRANSISTOR	2SA1576(QRS)	—	2SA1576(QRS)	—
Q205	TRANSISTOR	2SA1576(QRS)	—	2SA1576(QRS)	—
Q206	TRANSISTOR	2SC4081(QRS)	—	2SC4081(QRS)	—
Q208	TRANSISTOR	—	2SC4081(QRS)	—	2SC4081(QRS)
Q1411	TRANSISTOR	2SA1576(QRS)	—	2SA1576(QRS)	—
Q1413	TRANSISTOR	—	DTC144WU	—	DTC144WU
D201	ZENER DIODE	MTZ12AT-77	—	MTZ12AT-77	—
D603	DIODE	—	—	—	1N4148M
R209	RESISTOR	QRSA08J-335YN	—	QRSA08J-335YN	—
R210	RESISTOR	QRD123J-331SX	—	QRD123J-331SX	—
R211	RESISTOR	QRSA08J-750YN	—	QRSA08J-750YN	—
R212	RESISTOR	QRSA08J-102YN	—	QRSA08J-102YN	—
R213	RESISTOR	QRSA08J-102YN	—	QRSA08J-102YN	—
R214	RESISTOR	QRSA08J-222YN	—	QRSA08J-222YN	—
R215	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—
R216	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—
R217	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—
R218	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—

Notes : Mark — is not used.

Mark ← is same as left.

REF. NO	ITEM / MODEL	HR-J238E	HR-A230E	HR-A233E	HR-A237E
R221	RESISTOR	QRSA08J-750YN	QRSA08J-560YN	QRSA08J-750YN	QRSA08J-560YN
R222	RESISTOR	QRSA08J-750YN	—	QRSA08J-750YN	QRSA08J-560YN
R223	RESISTOR	—	—	—	QRSA08J-223YN
R224	RESISTOR	—	—	—	QRSA08J-223YN
R225	RESISTOR	—	—	—	QRSA08J-222YN
R226	RESISTOR	QRSA08J-0R0Y	QRSA08J-200YN	QRSA08J-0R0Y	QRSA08J-200YN
R227	RESISTOR	QRSA08J-0R0Y	—	QRSA08J-0R0Y	QRSA08J-200YN
R229	RESISTOR	QRSA08J-101YN	QRSA08J-0R0Y	QRSA08J-101YN	QRSA08J-0R0Y
R601	RESISTOR	—	—	—	QRSA08J-102YN
R603	RESISTOR	—	—	—	QRSA08J-473YN
R604	RESISTOR	—	—	—	QRSA08J-473YN
R606	RESISTOR	QRSA08J-473YN	—	QRSA08J-473YN	—
R607	RESISTOR	QRSA08J-473YN	—	QRSA08J-473YN	—
R608	RESISTOR	QRSA08J-333YN	—	QRSA08J-333YN	—
R609	RESISTOR	QRSA08J-103YN	—	QRSA08J-103YN	—
R610	RESISTOR	QRSA08J-224YN	—	QRSA08J-224YN	—
R615	RESISTOR	QRSA08J-682YN	—	QRSA08J-682YN	←
R616	RESISTOR	QRSA08J-682YN	—	QRSA08J-682YN	←
R1411	RESISTOR	QRSA08J-102YN	—	QRSA08J-102YN	—
R1415	RESISTOR	—	QRSA08J-103YN	—	QRSA08J-103YN
C205	E CAPACITOR	QEKJ0JM-476	—	QEKJ0JM-476	—
C206	CAPACITOR	QCYA1EK-104	—	QCYA1EK-104	—
C207	E CAPACITOR	QEKJ1HM-474	—	QEKJ1HM-474	—
C208	NP E CAPACITOR	QEP61HM-474	—	QEP61HM-474	—
C209	NP E CAPACITOR	QEP61HM-105	—	QEP61HM-105	—
C210	E CAPACITOR	QEKJ1HM-105	—	QEKJ1HM-105	—
C211	E CAPACITOR	QETA0JM-477	—	QETA0JM-477	—
C212	CAPACITOR	QCTA1CH-330	—	QCTA1CH-330	—
C213	CAPACITOR	QCTA1CH-330	—	QCTA1CH-330	—
C214	CAPACITOR	QCTA1CH-330	—	QCTA1CH-330	—
C215	CAPACITOR	QCTA1CH-330	—	QCTA1CH-330	—
C216	E CAPACITOR	—	—	—	QEKJ1CM-106
C601	E CAPACITOR	—	—	—	QEKJ1CM-106
C602	E CAPACITOR	—	—	—	QEKJ1CM-106
C605	E CAPACITOR	QEKJ1CM-106	—	QEKJ1CM-106	—
C606	CAPACITOR	QCYA1EK-223	—	QCYA1EK-223	—
C607	E CAPACITOR	QEKJ1CM-106	—	QEKJ1CM-106	—
C610	E CAPACITOR	QEKJ1CM-106	—	QEKJ1CM-106	—
C611	E CAPACITOR	QEKJ1CM-476	—	QEKJ1CM-476	—
C612	E CAPACITOR	QEKJ1CM-476	—	QEKJ1CM-476	—
C613	E CAPACITOR	QEKJ1CM-476	—	QEKJ1CM-476	—
C614	E CAPACITOR	QEKJ1CM-106	—	QEKJ1CM-106	—
C615	E CAPACITOR	QEKJ1CM-106	—	QEKJ1CM-106	—
C1416	CAPACITOR	QCYA1HK-681	—	QCYA1HK-681	←
C1417	CAPACITOR	QCYA1HK-681	—	QCYA1HK-681	←
C1418	CAPACITOR	—	—	—	QCYA1HK-102
L203	COIL	PU59152-1R0J	—	PU59152-1R0J	—
L204	COIL	PU59152-1R0J	—	PU59152-1R0J	—

Notes : Mark — is not used.

Mark ← is same as left.

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
L205	COIL	PU59152-1R0J	–	PU59152-1R0J	–
L206	COIL	PU59152-1R0J	–	PU59152-1R0J	–
L207	COIL	–	–	–	PU59152-R56J
L1417	COIL	PU59152-4R7J	–	PU59152-4R7J	←
L1418	COIL	PU59152-4R7J	–	PU59152-4R7J	←
L1419	COIL	–	–	–	PU59152-4R7J
L1420	RESISTOR	QRSA08J-0R0Y	–	QRSA08J-0R0Y	←
L1421	RESISTOR	QRSA08J-0R0Y	–	QRSA08J-0R0Y	←
L1422	COIL	PU59152-1R0J	–	PU59152-1R0J	←
S1411	SLIDE SWITCH, AV2	PESW0695	PESW0677	PESW0695	PESW0677
TB1	TERMINAL BOARD ASSEMBLY	PQ35509E	PQ35509P-2	PQ35509E-2	PQ35509S-2
W201	RESISTOR	QRSA08J-0R0Y	–	QRSA08J-0R0Y	–
W202	RESISTOR	QRSA08J-0R0Y	–	QRSA08J-0R0Y	–
W203	RESISTOR	QRSA08J-0R0Y	–	QRSA08J-0R0Y	–
J1412	RGB21PIN SOCKET, AV2	PEMC1019	–	PEMC1019	←
CN1411	CONNECTOR, MAIN	PEMC1167-117 (1-17)	PEMC1167-111 (7-17)	PEMC1167-117 (1-17)	PEMC1167-111 (7-17)
CN1412	CONNECTOR, MAIN	PEMC1167-112 (1-12)	←	←	PEMC1167-115 (1-15)

DISPLAY BOARD ASSEMBLY<28>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW1	DISPLAY BOARD ASSEMBLY	PB10973E1	PB10985C1-01	PB10985D1-01	PB10985E1-01

REC SAFETY BOARD ASSEMBLY<32>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW3	REC SAFETY BOARD ASSEMBLY	PB10973A3	PB10985A3	←	←

CASSETTE SW BOARD ASSEMBLY<33>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW4	CASSETTE SW BOARD ASSEMBLY	PB10973A4	PB10985A4	←	←

Notes : Mark — is not used.

Mark ← is same as left.

SW/JACK BOARD ASSEMBLY<36>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW2	SW/JACK BOARD ASSEMBLY	PB10973D2	PB10985A2-01	←	←

PRE/REC BOARD ASSEMBLY<43>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW1	PRE/REC BOARD ASSEMBLY	PB10976C	PB10976E	←	←
Q102	TRANSISTOR	DTA144WU	–	–	–
Q103	TRANSISTOR	DTC144WU	–	–	–
C106	CAPACITOR	QCYA1HK-272	QCYA1EK-104	←	←
C121	CAPACITOR	QCYA1EK-104	–	–	–

PDC BOARD ASSEMBLY<70>

REF. NO	MODEL ITEM	HR-J238E	HR-A230E	HR-A233E	HR-A237E
PW5	PDC BOARD ASSEMBLY	PB10973C5	–	–	PB10985J5
C1909	E CAPATITOR	QETF1CM-476	–	–	QEKJ1CM-476
LC1901	N FILTER	PU60950-101GZ	–	–	PELN1226-03
LC1903	N FILTER	PU60950-101GZ	–	–	PELN1226-03
LC1904	N FILTER	PU60950-101GZ	–	–	PELN1226-03
LC1906	N FILTER	PU60950-101GZ	–	–	PELN1226-03

Notes : Mark — is not used.

Mark← is same as left.

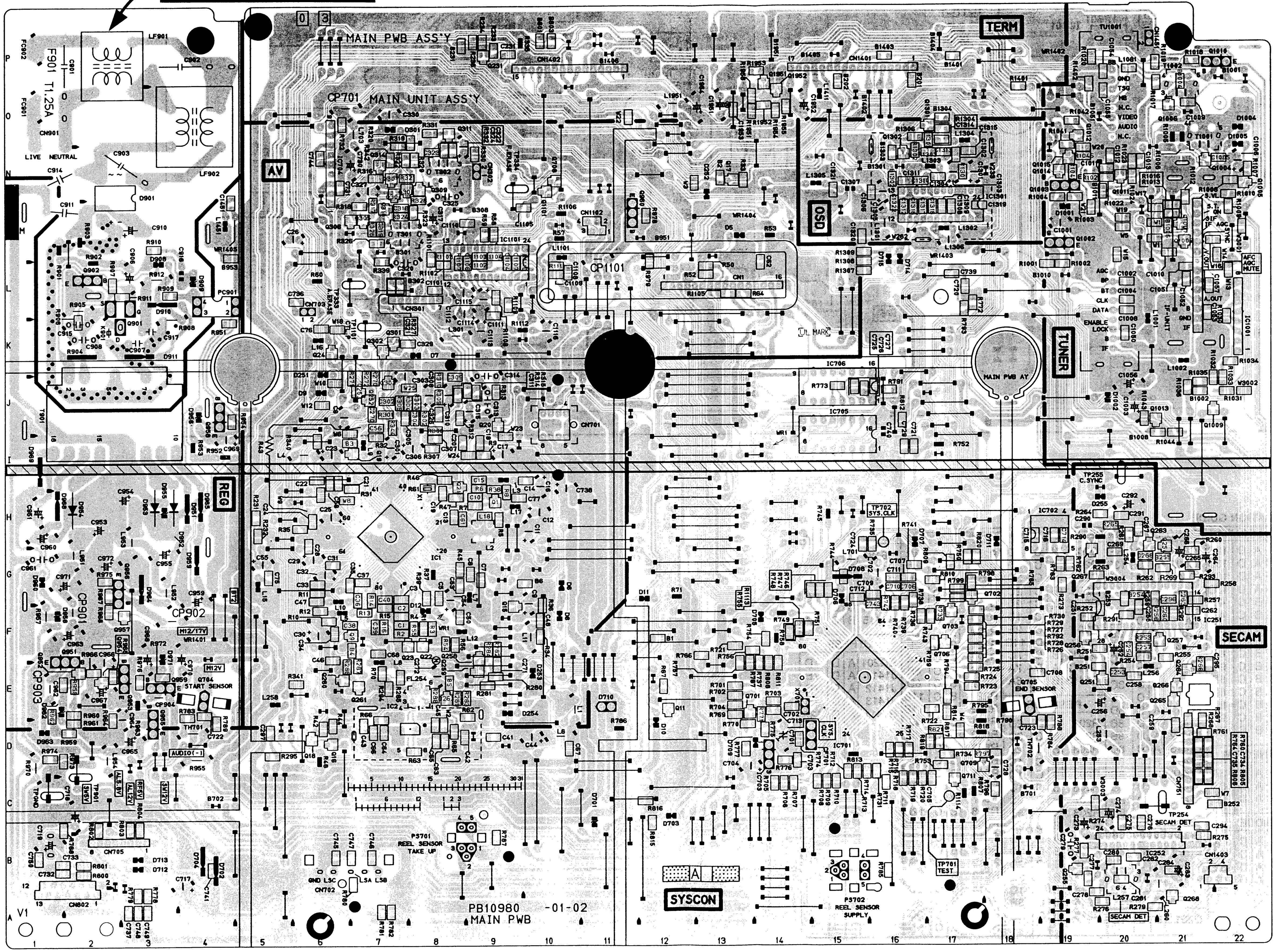
COMPONENT PARTS LOCATION GUIDE

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	7F
C2	B	C	7F
C3	B	C	7G
C5	B	C	8G
C6	A	D	6J
C7	B	C	9G
C8	B	C	9G
C9	A	D	10F
C10	B	C	9H
C11	A	D	10H
C12	A	D	10H
C13	B	C	8H
C14	B	C	10I
C15	B	C	9I
C16	A	D	10I
C17	A	D	9I
C18	B	C	9I
C19	B	C	8H
C20	B	C	8I
C21	B	C	6I
C22	B	C	6I
C23	A	D	6I
C24	B	C	6H
C25	A	D	6H
C26	A	D	6M
C28	B	C	6H
C29	A	D	6G
C30	A	D	6F
C31	B	C	6G
C32	A	D	6G
C33	B	C	6G
C34	B	C	6F
C35	B	C	7G
C36	B	C	7G
C37	B	C	7G
C38	B	C	7F
C39	B	C	7F
C40	B	C	7G
C41	B	C	9D
C42	B	C	8D
C43	B	C	7D
C44	A	D	10D
C45	B	C	8D
C46	B	C	6F
C47	B	C	6G
C48	B	C	10F
C50	B	C	8F
C53	B	C	8G
C54	A	D	8F
C55	A	D	5G
C56	B	C	7J
C58	B	C	6I
C61	B	C	8H
C62	B	C	14L
C63	B	C	8D
C64	B	C	7D
C65	B	C	8D
C66	B	C	7D
C67	B	C	10D
C68	B	C	7F
C75	B	C	5G
C76	B	C	6K
C77	B	C	9H
C231	B	C	9P
C251	B	C	20F
C252	A	D	20F
C253	B	C	20E
C254	B	C	20F
C255	B	C	20F
C256	A	D	20E
C257	B	C	20F
C258	B	C	20E
C259	B	C	21D
C260	B	C	21F
C262	B	C	21F
C263	B	C	21G
C264	A	D	21G
C265	B	C	21G
C266	A	D	21G
C267	B	C	20H
C268	B	C	20G
C269	B	C	20G
C270	B	C	7J
C271	B	C	9E
C272	A	D	8E
C273	A	D	19B
C274	A	D	20C
C275	B	C	20C
C276	B	C	20C
C277	B	C	19B
C278	B	C	19A
C279	A	D	19B
C280	B	C	20B
C281	B	C	20B
C282	B	C	20B
C283	A	D	21B
C284	B	C	21B
C290	A	D	19H
C291	B	C	20H
C292	A	D	20H
C294	B	C	21C
C295	B	C	21E
C296	B	C	21G
C297	B	C	5D
C301	A	D	7I
C302	B	C	7J
C303	A	D	7J
C304	B	C	8J
C305	B	C	7J
C306	A	D	8I
C307	B	C	8I
C308	A	D	8J
C309	B	C	8J
C310	A	D	8J
C311	B	C	8J
C313	A	D	9J
C314	A	D	9J
C315	A	D	9J
C317	A	D	8M
C318	B	C	7M
C319	B	C	7M
C320	A	D	7L
C321	B	C	7L
C322	A	D	8N
C323	B	C	8N
C324	B	C	8N
C325	A	D	8N
C326	B	C	8J
C327	A	D	7N
C329	B	C	8K
C330	A	D	7O
C701	A	D	14D
C702	B	C	14E
C703	B	C	14D
C704	A	D	14D
C705	B	C	17C
C706	B	C	16G
C707	B	C	16G
C708	B	C	18E
C709	B	C	16G
C710	B	C	16G
C711	B	C	16G
C712	B	C	15G
C713	B	C	14E
C714	B	C	19H
C715	B	C	18H
C716	B	C	19H
C717	A	D	4B
C718	A	D	2C
C719	A	D	1B
C720	B	C	17L
C721	B	C	16I
C722	B	C	4E
C723	B	C	18D
C724	B	C	15H
C725	B	C	15J
C726	B	C	15J
C727	B	C	16J
C728	A	D	18D
C729	B	C	16I
C730	A	D	7N
C731	B	C	6N
C732	B	C	1B
C733	B	C	1B
C734	B	C	21D
C735	B	C	21D
C736	B	C	6L
C737	B	C	3A
C738	A	D	10I
C739	B	C	17L
C740	A	D	16I
C741	B	C	4B
C742	A	D	15E
C743	B	C	16F
C744	B	C	6N
C745	B	C	6B
C746	B	C	7B
C747	B	C	7B
C748	B	C	3A
C749	B	C	3A
C750	B	C	1B
C751	A	D	15E
C901	A	D	2P
C902	A	D	3P
C903	A	D	2N
C906	A	D	3L
C907	A	D	3K
C908	A	D	2K
C910	A	D	2M
C911	A	D	2M
C914	A	D	2N
C915	A	D	2K
C916	A	D	4L
C917	A	D	3K
C951	A	D	1H
C953	A	D	2H
C954	A	D	3H
C955	A	D	3G
C959	A	D	4G
C960	A	D	1H
C961	A	D	1G
C962	B	C	2E
C963	A	D	1F
C964	A	D	3E
C965	A	D	3D
C966	A	D	2E
C967	A	D	2E
C968	A	D	3E
C969	A	D	4I
C970	A	D	4E
C971	A	D	1G
C972	A	D	2G
C1001	A	D	19M
C1002	B	C	20L
C1003	A	D	20J
C1004	B	C	20L
C1005	B	C	22N
C1006	A	D	22N
C1008	B	C	20L
C1009	B	C	21O
C1010	B	C	21M
C1011	B	C	20N
C1012	B	C	20N
C1013	B	C	20N
C1050	B	C	20K
C1051	B	C	21L
C1052	B	C	21L
C1053	B	C	21L
C1054	B	C	20P
C1055	B	C	20O
C1056	A	D	20J
C1057	B	C	21L
C1101	B	C	8L
C1102	B	C	9L
C1103	B	C	9M
C1104	B	C	9L
C1105	B	C	10M
C1106	B	C	9L
C1107	B	C	9L
C1108	B	C	10L
C1109	B	C	10L
C1110	B	C	9M
C1111	B	C	9L
C1112	A	D	9L
C1113	A	D	9K
C1114	A	D	9L
C1115	A	D	9L
C1116	A	D	10K
C1301	A	D	17N
C1302	B	C	17N
C1303	A	D	17N
C1304	B	C	17N
C1305	A	D	16N
C1306	B	C	16N
C1307	A	D	15N
C1308	B	C	17M
C1309	B	C	17M
C1310	B	C	16N
C1311	B	C	16N
C1312	B	C	16M
C1313	B	C	17N
C1314	B	C	17O
C1315	B	C	17N
C1316	B	C	17M
C1317	B	C	16M
C1318	B	C	16M
C1319	B	C	17M
C1320	B	C	15M
C1321	B	C	15N
C1322	B	C	16M
C1451	B	C	4N
C1951	A	D	13O
C1952	A	D	14O
C1953	B	C	13O
C1954	A	D	13O
CONNECTOR			
CN1	A	D	12L
CN301	A	D	7L
CN302	A	D	9N
CN701	A	D	10J
CN702	A	D	6B
CN703	A	D	6L
CN705	A	D	3B
CN751	A	D	21D
CN802	A	D	2A
CN901	A	D	1O
CN1102	A	D	11M
CN1401	A	D	16P
CN1402	A	D	11P
CN1403	A	D	22B
CN1451	A	D	20P
CIRCUIT PROTECTOR			
CP701	A	D	6O
CP901	A	D	2F
CP902	A	D	3F
CP903	A	D	1E
CP904	A	D	3E
CP1101	A	D	11M
DIODE			
D5	A	D	13M
D6	A	D	10G
D7	A	D	8K
D8	A	D	10F
D9	A	D	6J
D10	A	D	12E
D11	A	D	11G
D12	A	D	8F
D251	A	D	6K
D252	A	D	13M
D253	A	D	10E
D254	A	D	9E
D255	A	D	20H
D301	A	D	7O
D701	A	D	11C
D702	A	D	4B
D703	A	D	12C
D704	A	D	4B
D705	A	D	14F
D706	A	D	15G
D707	A	D	16H
D708	A	D	15G
D709	A	D	14D
D710	A	D	11E
D711	A	D	18G
D712	A	D	3B
D713	A	D	3B
D714	A	D	16M
D715	A	D	16M
D901	B	C	2N
D908	A	D	3L
D909	A	D	4L
D910	A	D	4L
D911	A	D	3K
D951	A	D	4I
D952	A	D	3I
D953	A	D	3I
D954	A	D	2I
D955	A	D	3H
D956	A	D	4J
D958	A	D	1F
D959	A	D	4H
D960	A	D	1G
D962	A	D	1E
D963	A	D	1D
D964	A	D	3G
D965	A	D	4I
D968	A	D	1H
D969	A	D	1I
D971	A	D	3F
D1001	A	D	19M
D1002	A	D	20J
D1004	A	D	22O
D1005	A	D	22N
FUSE			
F901	A	D	1O
IC			
IC1	B	C	7H
IC2	B	C	8D
IC251	A	D	20G
IC252	A	D	21B
IC701	B	C	15E
IC702	A	D	18H
IC703	A	D	14D
IC704	A	D	6N
IC705	A	D	16I
IC706	A	D	16J
IC1001	A	D	22K
IC1101	A	D	10L
IC1301	A	D	17M
COIL			
L1	A	D	10D
L2	A	D	9H
L3	A	D	9I
L4	A	D	6I
L5	A	D	7F
L6	A	D	10D
L7	A	D	9F
L8	A	D	7E
L9	A	D	7I
L10	A	D	6G
L11	A	D	10F
L12	A	D	9F
L15	A	D	5G
L16	A	D	6K
L17	A	D	10H
L18	B	C	9H
L253	A	D	20D
L254	A	D	20G
L256	A	D	21E
L257	A	D	20B
L258	A	D	5E
L260	A	D	21A
L301	A	D	8K
L701	A	D	15G
L702	A	D	16G
L703	A	D	7O
L951	A	D	2G
L952	A	D	3G
L953	A	D	3G
L954	A	D	2D
L1001	A	D	20K
L1002	A	D	21K
L1081	B	C	20P
L1101	A	D	10M
L1301	A	D	16M
L1302	A	D	17M
L1303	A	D	17N
L1304	A	D	17O
L1305	A	D	15N
L1306	A	D	17M
L1411	A	D	15O
L1451	A	D	4M
L1951	A	D	12O
TRANSISTOR			
Q1	B	C	9H
Q9	B	C	7F
Q11	B	C	12E
Q15	B	C	9F
Q16	B	C	6D
Q17	B	C	13N
Q18	B	C	6D
Q19	B	C	7I
Q20	B	C	9J
Q21	B	C	8I
Q22	B	C	8F
Q23	B	C	8F
Q24	B	C	6K
Q231	B	C	9P
Q251	B	C	20E
Q252	B	C	7J
Q253	B	C	7J
Q254	B	C	21G
Q255	B	C	19B
Q256	B	C	19F
Q257	B	C	21F
Q258	B	C	9F
Q259	B	C	9E
Q260	B	C	6E
Q261	B	C	7E
Q262	B	C	8E
Q263	B	C	20G
Q264	B	C	21E
Q265	B	C	21E
Q266	B	C	21E
Q267	B	C	19G
Q268	B	C	21A
Q301	B	C	7K
Q302	B	C	7K
Q303	B	C	7J
Q304	B	C	7N
Q305	B	C	7M
Q306	B	C	7M
Q307	B	C	7N
Q308	B	C	7N
Q309	B	C	8N
Q310	B	C	7M
Q311	B	C	8O
Q314	B	C	7N
Q701	B	C	13E
Q702	B	C	17G
Q703	B	C	17F
Q704	A	D	4E
Q705	A	D	18E
Q706	B	C	17F
Q708	B	C	10N
Q709	B	C	18D
Q711	B	C	17C
Q901	A	D	2L
Q902	A	D	2L
Q951	A	D	1F
Q952	B	C	2E
Q953	A	D	3E
Q954	B	C	2E
Q955	A	D	3D
Q956	A	D	2G
Q957	B	C	3F
Q958	A	D	4J
Q959	A	D	3E
Q960	A	D	11M
Q1002	A	D	19M
Q1003	A	D	19N
Q1004	B	C	21N
Q1005	B	C	22N
Q1006	B	C	21O
Q1007	B	C	21M
Q1008	B	C	21M
Q1009	B	C	22J
Q1010	A	D	22P
Q1011	B	C	20N
Q1012	B	C	19O
Q1013	B	C	21J
Q1014	B	C	19N
Q1015	B	C	19N
Q1101	B	C	10N
Q1301	B	C	17O
Q1302	B	C	16N
Q1951	B	C	14P
Q1952	B	C	14O
RESISTOR			
R1	B	C	8F
R2	B	C	7F
R3	B	C	8F
R4	B	C	7F
R5	B	C	9H
R6	B	C	9I
R7	B	C	9H
R8	B	C	9H
R9	B	C	9I
R10	B	C	6F
R11	B	C	6G
R12	B	C	6F
R13	B	C	7F
R14	B	C	7G
R15	B	C	7F
R16	B	C	7F
R31	B	C	7I
R32	B	C	7I
R33	B	C	13N
R34	B	C	10F
R35	B	C	6H
R36	B	C	10F
R37	A	D	8G
R38	B	C	9H
R39	B	C	8G
R42	B	C	6D
R43	A	D	6H
R44	B	C	6D
R45	B	C	8G
R46	B	C	8I
R47	B	C	8H
R48	A	D	6D
R50	B	C	13L
R52	B	C	13L
R53	A	D	14M
R54	B	C	8F
R55	B	C	8F
R56	B	C	8F
R57	A	D	10M
R58	B	C	9M
R59	B	C	9M
R60	A	D	6L
R61	B	C	8I
R62	B	C	9E
R63	B	C	8D
R64	B	C	13L
R65	B	C	8D
R66	B	C	7D
R67	B	C	12E
R70	B	C	7E
R71	A	D	12G
R231	B	C	5H
R232	B	C	5H
R233	B	C	9P
R234	B	C	9P
R235	B	C	9P
R251	B	C	20F
R252	B	C	19F
R253	B	C	20F
R254	B	C	20F
R255	B	C	21E
R256	B	C	21F
R257	B	C	21F
R258	B	C	21G
R259	B	C	20G
R260	B	C	21G
R261	B	C	20H
R262	B	C	20G
R263	A	D	20G
R264	B	C	20H
R265	B	C	20H
R266	B	C	21E
R267	B	C	21D
R268	B	C	21D
R269	B	C	21G
R270	B	C	7J
R271	B	C	7J
R272	B	C	7J
R273	B	C	19G
R274	B	C	20C
R275	B	C	21B
R276	B	C	20A
R277	B	C	19B
R279	B	C	20A
R280	B	C	9E
R281	B	C	9E
R282	B	C	9F
R283	B	C	9E
R284	B	C	9F
R285	B	C	7E
R286	B	C	6E
R287	B	C	7E
R288	B	C	8E
R289	B	C	8E
R290	A	D	20H
R291	B	C	20F
R292	B	C	21F
R293	B	C	21G
R294	B	C	7E
R295	B	C	5D
R301	B	C	7J
R302	B	C	8J
R303	B	C	8J
R304	B	C	8J
R305	B	C	7J
R307	B	C	8I
R308	B	C	8J
R309	B	C	8J
R310	B	C	8J
R312	B	C	8J
R313	B	C	9J
R314	B	C	9J
R315	B	C	9J
R316	B	C	7N
R317	B	C	7M
R318	B	C	7M
R319	B	C	7N
R320	B	C	8O
R321	B	C	7N
R322	B	C	7N
R323	B	C	8M
R324	B	C	7M
R325	B	C	7M
R326	B	C	7M
R327	B	C	7L
R328	B	C	8N
R329	B	C	8N
R330	B	C	9N
R331	B	C	8O
R332	B	C	8N
R335	A	D	9P
R339	B	C	7L
R340	B	C	6I
R341	B	C	6E
R342	B	C	7N
R344	B	C	7J
R701	B	C	13E
R702	B	C	13E
R703	B	C	14E
R704	B	C	13E
R705	B	C	14C
R706	B	C	14C
R707	B	C	14C
R708	B	C	15C
R709	B	C	15C
R710	B	C	15C
R711	B	C	16C
R712	B	C	15D
R713	B	C	15D
R714	B	C	15D
R715	B	C	16D
R716	B	C	16D
R717	B	C	16D
R718	B	C	16C
R719	B	C	16C
R720	B	C	16C
R721	B	C	13F
R722	B	C	17E
R723	B	C	17E
R724	B	C	17E
R725	B	C	17E
R726	B	C	17F
R727	B	C	17F
R728	B	C	17F
R729	B	C	17F
R730	B	C	17F
R731	B	C	16D
R732	B	C	6O
R733	B	C	17F
R734	B	C	17D
R735	B	C	16H
R736	B	C	16F
R737	B	C	14E
R738	B	C	16G
R739	B	C	16F
R740	B	C	16F
R741	B	C	16G
R742	B	C	16F
R743	B	C	17F
R744	B	C	15G
R745	A	D	15H
R746	B	C	15G
R747	B	C	15G
R748	B	C	15G
R749	A	D	14F
R750	B	C	17G
R751	B	C	14F
R752	A	D	17I
R753	B	C	17D
R754	B	C	14F
R755	B	C	14F
R756	B	C	13F
R757	B	C	13E
R758	A	D	14F
R759	B	C	17F
R760	B	C	21D
R761	B	C	21D
R762	B	C	19G
R763	B	C	19G
R764	B	C	21D
R765	B	C	17G
R766	B	C	13F
R767	B	C	13E
R768	B	C	2C
R769	B	C	13E
R770	B	C	13D
R771	B	C	14E
R772	B	C	17L
R773	B	C	15J
R774	B	C	14D
R775	B	C	14D
R776	B	C	14D
R777	B	C	13D
R778	B	C	3A
R779	B	C	3A
R780	B	C	7B
R781	B	C	7A
R782	B	C	7A
R783	B	C	4E
R784	B	C	19D
R785	B	C	16B
R786	A	D	11D
R787	B	C	9B
R788	B	C	19D
R789	B	C	4D
R790	A	D	18D
R791	B	C	16J
R792	B	C	17F
R793	B	C	17L
R794	B	C	17E
R795	A	D	18E
R796	B	C	18C
R797	B	C	17D
R798	B	C	17G
R799	B	C	17G
R800	B	C	2B
R801	B	C	2B
R802	B	C	2C
R803	B	C	3C
R804	B	C	3C
R805	B	C	21C
R806	B	C	21C
R807	A	D	17C
R808	B	C	14E
R809	B	C	17G
R810	B	C	17G
R811	B	C	14E
R812	B	C	16J
R813	A	D	15D
R814	B	C	17E
R815	B	C	12C
R816	B	C	12C
R817	B	C	17D
R818	A	D	18D
R819	B	C	17D
R820	B	C	17G
R821	B	C	17D
R901	A	D	1M
R902	A	D	2L
R903	A	D	2M
R904	A	D	2K
R905	A	D	2L
R906	B	C	2K
R907	B	C	2L
R908	A	D	4K
R909	B	C	3L
R910	B	C	3M
R911	B	C	3L
R912	A	D	3L
R951	B	C	4K
R952	A	D	5I
R953	A	D	4I
R954	B	C	4J
R955	A	D	4D
R957	A	D	1F
R958	B	C	2E
R959	B	C	2D
R960	B	C	2E
R961	B	C	2D
R962	B	C	1E
R963	A	D	3E
R964	B	C	2D
R965	B	C	2E
R966	B	C	2E
R967	B	C	2G
R968	B	C	2F
R970	A	D	1C
R972	B	C	3E
R973	B	C	2D
R974	B	C	1D
R975	B	C	2G
R976	B	C	3E
R978	B	C	12M
R979	B	C	12L
R1001	B	C	19L
R1002	B	C	19L
R1003	B	C	19N
R1004	B	C	19N
R1005	A	D	21N
R1006	A	D	21N
R1007	B	C	22N
R1008	B	C	22N
R1009	B	C	22M
R1010	B	C	22N
R1012	B	C	21N
R1013	B	C	21M
R1016	B	C	21M
R1017	B	C	21P
R1018	B	C	21P
R1019	B	C	21P
R1020	B	C	19P
R1021	B	C	19N
R1022	B	C	20N
R1023	B	C	20N
R1024	B	C	20N
R1030	B	C	22K
R1031	B	C	22J
R1032	B	C	22J
R1033	B	C	22J
R1034	B	C	22K
R1035	B	C	21J
R1036	B	C	21J
R1041	B	C	19N
R1042	B	C	19O
R1043	B	C	20J
R1044	B	C	21I
R1045	B	C	19N
R1046	B	C	19N
R1101	B	C	8M
R1102	B	C	8L
R1103	B	C	8M
R1104	B	C	9M
R1105	B	C	13L
R1106	A	D	10M
R1107	B	C	8L
R1108	B	C	9L
R1109	B	C	9L
R1110	B	C	10L
R1111	B	C	10L
R1112	A	D	10K
R1113	B	C	14F
R1114	A	D	17C
R1301	B	C	17N
R1302	B	C	16N
R1303	B	C	17N
R1304	B	C	17O
R1305	B	C	17O
R1306	B	C	16O
R1307	B	C	15L
R1308	B	C	15L
R1309	B	C	15M
R1401	B	C	18O
R1402	B	C	19P
R1951	B	C	13O
R1952	B	C	14O
R1953	B	C	14P
R1954	B	C	14O
R1955	B	C	14O
R1956	B	C	13O
TEST POINT			
TP254	A	D	21C
TP255	A	D	20I
TP333	A	D	7L
TP334	A	D	9N
TP701	A	D	17C
TP702	A	D	16H
TP901	A	D	2C
TP1101	A	D	7L
TPGND	A	D	1C
OTHERS			
CF701	A	D	15D
FL254	A	D	8E
IF-UNIT	A	D	21K
K901	A	D	2K
LF901	A	D	2P
LF902	A	D	4O
PC901	A	D	5L
PS701	A	D	9B
PS702	A	D	15B
T301	A	D	7M
T302	A	D	8N
T901	A	D	1K
T1001	A	D	22N
T1002	A	D	21O
TH701	A	D	4D
TH702	A	D	18D
TU1001	A	D	20P
X1	A	D	8I
X701	A	D	14E

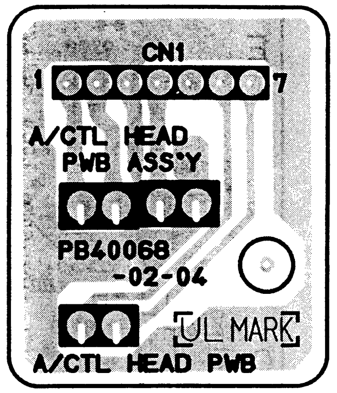
SECTION 4
CHARTS AND DIAGRAMS

4.11 MAIN AND A/C HEAD CIRCUIT BOARDS

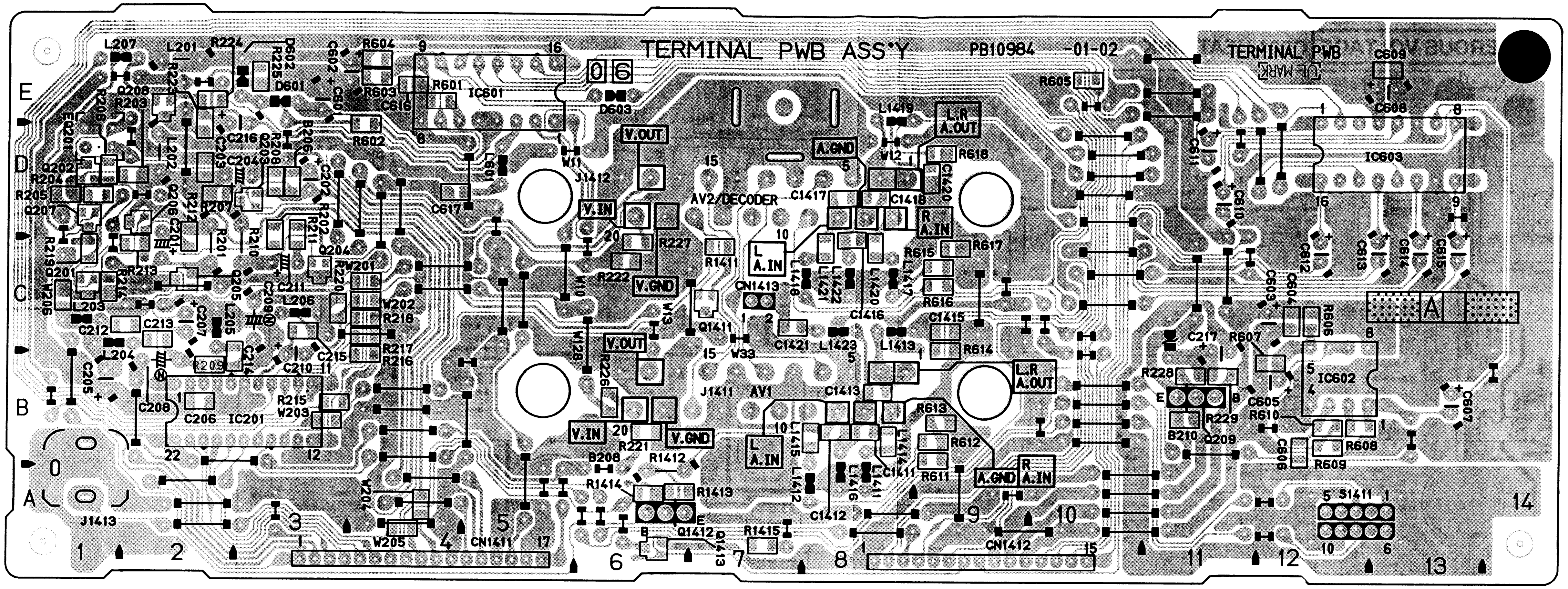
DANGEROUS VOLTAGE Q901 HEAT SINK


F901 T1.25A
LIVE NEUTRAL
LF901
LF902
CN901
MAIN PWB ASS'Y
CP701 MAIN UNIT ASS'Y
AV
TERM
OSD
TUNER
CP1101
UL MARK
MAIN PWB AY
REG
CP901
CP902
CP903
M12/17V
M12V
START SENSOR
AUDIO(-1)
SYSCON
SECAM
SECAM DET
END SENSOR
TP702 SYS.CLK
TP781 TEST
P5701 REEL SENSOR TAKE UP
P5702 REEL SENSOR SUPPLY
PB10980 -01-02
MAIN PWB
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
P O N M L K J I H G F E D C B A

—A/C HEAD—


CN1
1
7
A/CTL HEAD PWB ASS'Y
PB40068 -02-04
UL MARK
A/CTL HEAD PWB

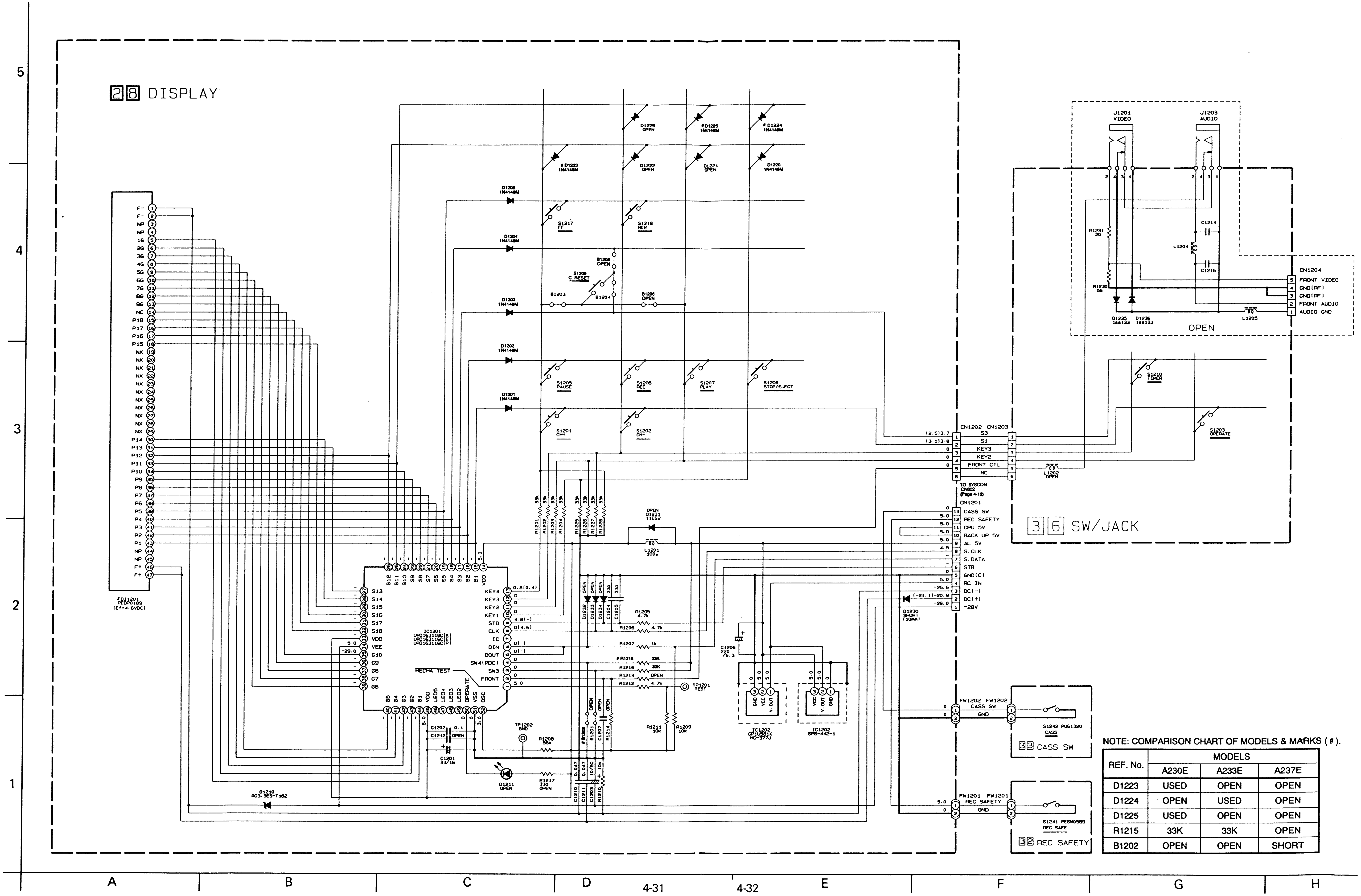
4.13 TERMINAL CIRCUIT BOARD


TERMINAL PWB ASS'Y
PB10984 -01-02
TERMINAL PWB
UL MARK
AV2/DECODER
AV1
V.OUT
V.IN
V.GND
A.GND
L A.IN
R A.IN
L.R A.OUT
IC201
IC601
IC602
IC603
CN1411
CN1412
CN1413
J1411
J1412
J1413
S1411
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14

COMPONENT PARTS LOCATION GUIDE

REF.NO.	LOCATION		
CAPACITOR			
C201	A	D	2C
C202	A	D	3D
C203	B	C	2D
C204	A	D	2D
C205	A	D	1B
C206	B	C	2B
C207	A	D	2C
C208	A	D	2C
C209	A	D	3C
C210	A	D	3C
C211	A	D	3C
C212	B	C	2C
C213	B	C	2C
C214	B	C	3C
C215	B	C	3C
C216	A	D	3E
C217	A	D	11C
C601	A	D	3E
C602	A	D	4E
C603	A	D	12C
C604	B	C	12C
C605	A	D	12B
C606	B	C	12B
C607	A	D	13B
C608	A	D	13E
C609	B	C	13E
C610	A	D	11D
C611	A	D	11E
C612	A	D	12D
C613	A	D	13D
C614	A	D	13D
C615	A	D	13D
C616	B	C	4E
C617	B	C	4D
C1411	B	C	8B
C1412	B	C	8B
C1413	B	C	8B
C1415	B	C	9C
C1416	B	C	8D
C1417	B	C	8D
C1418	B	C	8D
C1420	B	C	9D
C1421	B	C	7C
CONNECTOR			
CN1411	A	D	3A
CN1412	A	D	8A
CN1413	A	D	7C
DIODE			
D201	A	D	11C
D601	A	D	3E
D602	A	D	3E
D603	A	D	6E
IC			
IC201	A	D	2B
IC601	A	D	5E
IC602	A	D	13B
IC603	A	D	12E
COIL			
L201	A	D	2E
L202	A	D	2E
L203	A	D	1C
L204	A	D	1C
L205	A	D	2C
L206	A	D	3C
L207	A	D	1E
L601	A	D	5D
L1411	A	D	8B
L1412	A	D	8B
L1413	A	D	8C
L1414	B	C	8B
L1415	B	C	8B
L1416	A	D	8B
L1417	A	D	8D
L1418	A	D	8D
L1419	A	D	8E
L1420	B	C	8D
L1421	B	C	8D
L1422	A	D	8D
L1423	A	D	8C
TRANSISTOR			
Q201	B	C	1C
Q202	B	C	1D
Q203	B	C	3D
Q204	B	C	3C
Q205	B	C	2C
Q206	B	C	2D
Q207	B	C	1D
Q208	B	C	2E
Q209	A	D	11B
Q1411	B	C	7C
Q1412	A	D	7A
Q1413	B	C	6A
RESISTOR			
R201	A	D	2D
R202	B	C	3D
R203	B	C	2D
R204	B	C	1D
R205	B	C	1D
R206	B	C	1D
R207	B	C	2D
R208	B	C	3D
R209	B	C	2C
R210	A	D	3D
R211	B	C	3D
R212	B	C	2D
R213	B	C	2D
R214	B	C	1C
R215	B	C	3B
R216	B	C	4C
R217	B	C	4C
R218	B	C	4C
R219	B	C	1D
R220	B	C	3C
R221	B	C	6B
R222	B	C	6C
R223	B	C	2E
R224	B	C	2E
R225	B	C	3E
R226	B	C	6B
R227	B	C	6D
R228	B	C	11B
R229	B	C	11B
R601	B	C	4E
R602	B	C	4E
R603	B	C	4E
R604	B	C	4E
R605	B	C	10E
R606	B	C	12C
R607	B	C	12C
R608	B	C	12B
R609	B	C	12B
R610	B	C	12B
R611	B	C	9B
R612	B	C	9B
R613	B	C	9B
R614	B	C	9C
R615	B	C	9C
R616	B	C	9C
R617	B	C	9D
R618	B	C	9D
R1411	B	C	7D
R1412	A	D	7B
R1413	B	C	6A
R1414	B	C	6A
R1415	B	C	7A
OTHERS			
EQ201	A	D	1D
J1411	A	D	7B
J1412	A	D	.7D
J1413	A	D	1B
S1411	A	D	12A

4.14 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW SCHEMATIC DIAGRAMS

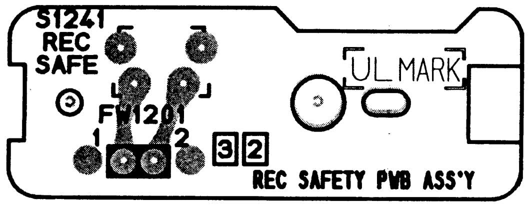

28 DISPLAY
36 SW/JACK
33 CASS SW
32 REC SAFETY
#D11201
PEDP0189
(Ef=4.6VDC)
F- F- NP NP 1G 2G 3G 4G 5G 6G 7G 8G 9G NC P18 P17 P16 P15 NX NX NX NX NX NX NX NX NX NX NX P14 P13 P12 P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1 NP NP F+ F+
IC1201
UPD16311GC(K)
UPD16311GC(E)
UPD16311GC(P)
S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 VDD
S13 S14 S15 S16 S17 S18 VDD VEE G10 G9 G8 G7 G6
G5 G4 G3 G2 G1 VDD LED5 LED4 LED3 LED2 OPERATE VSS OSC
KEY4 KEY3 KEY2 KEY1 STB CLK IC DIN DOUT SW4(PDC) SW3 FRONT
MECHA TEST
0.8(0.4)
4.8(-)
0(4.6)
0(-)
5.0
-29.0
3.0
C1202 0.1
C1212 OPEN
C1201 33/16
TP1202 GND
R1208 56k
D1211 OPEN
R1217 330 OPEN
D1210 RD3.3ES-T1B2
D1226 OPEN
#D1225 1N4148M
#D1224 1N4148M
#D1223 1N4148M
D1222 OPEN
D1221 OPEN
D1220 1N4148M
D1205 1N4148M
D1204 1N4148M
D1203 1N4148M
D1202 1N4148M
D1201 1N4148M
S1217 FF
S1218 REW
B1206 OPEN
S1209 C. RESET
B1203
B1204
B1205 OPEN
S1205 PAUSE
S1206 REC
S1207 PLAY
S1208 STOP/EJECT
S1201 CH+
S1202 CH-
R1201 R1202 R1203 R1204 R1225 R1226 R1227 R1228 33k
OPEN D1231 11ES2
L1201 100µ
D1232 D1233 D1234 OPEN
C1204 C1205 33p
R1205 4.7k
R1206 4.7k
R1207 1k
#R1215 33K
R1216 33K
R1213 OPEN
R1212 4.7k
TP1201 TEST
#B1202
B1201 OPEN
C1207 OPEN
R1214 OPEN
R1211 10k
R1209 10k
C1210 0.047
C1211 0.047
C1203 10/50
R1210 10k
C1206 220/6.3
IC1202 GP1U581X HC-377J
IC1202 SPS-442-1
GND VCC V. OUT
VCC V. OUT GND
CN1202 CN1203
(2.5)3.7 S3
(3.1)3.8 S1
KEY3
KEY2
FRONT CTL
NC
L1202 OPEN
TO SYSCON CN802 (Page 4-12)
CN1201
CASS SW
REC SAFETY
CPU 5V
BACK UP 5V
AL 5V
S. CLK
S. DATA
STB
GND(C)
RC IN
DC(-)
DC(+)
-28V
-25.5
(-21.1)-20.9
-29.0
D1230 SHORT (10mm)
J1201 VIDEO
J1203 AUDIO
R1231 20
R1230 56
C1214
L1204
C1216
D1235 1SS133
D1236 1SS133
L1205
OPEN
CN1204
FRONT VIDEO
GND(RF)
GND(RF)
FRONT AUDIO
AUDIO GND
S1210 TIMER
S1203 OPERATE
FW1202 FW1202
CASS SW
GND
S1242 PU61320
CASS
FW1201 FW1201
REC SAFETY
GND
S1241 PESW0589
REC SAFE
5
4
3
2
1
A B C D E F G H

NOTE: COMPARISON CHART OF MODELS & MARKS (#).

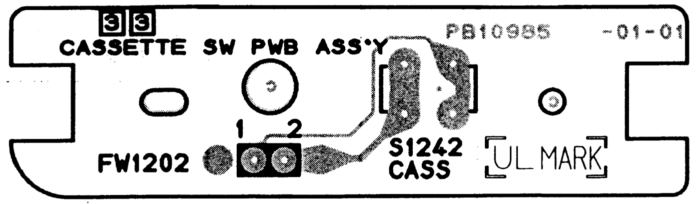
REF. No.	MODELS		
	A230E	A233E	A237E
D1223	USED	OPEN	OPEN
D1224	OPEN	USED	OPEN
D1225	USED	OPEN	OPEN
R1215	33K	33K	OPEN
B1202	OPEN	OPEN	SHORT

4.15 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW CIRCUIT BOARDS

— REC SAFETY —


S1241
REC
SAFE
FW1201
1
2
UL MARK
32
REC SAFETY PWB ASS'Y

— CASSETTE SW —

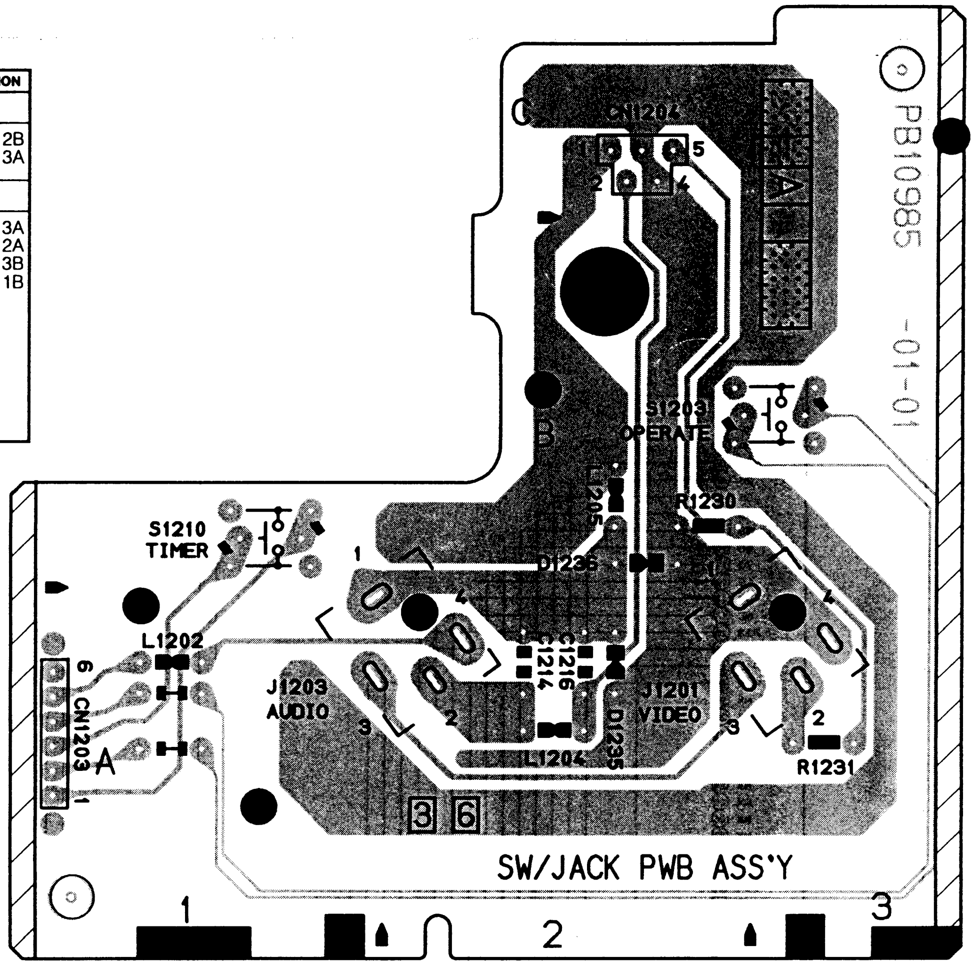

33
CASSETTE SW PWB ASS'Y
PB10985 -01-01
1 2
FW1202
S1242
CASS
UL MARK

— SW/JACK —

COMPONENT PARTS LOCATION GUIDE <SW/JACK>

REF.NO.	LOCATION		
CAPACITOR			
C1214	A	D	2A
C1216	A	D	2A
CONNECTOR			
CN1203	A	D	1A
DIODE			
D1235	A	D	2A
D1236	A	D	2B
COIL			
L1202	A	D	1A
L1204	A	D	2A
L1205	A	D	2B

REF.NO.	LOCATION		
RESISTOR			
R1230	A	D	2B
R1231	A	D	3A
OTHERS			
J1201	A	D	3A
J1203	A	D	2A
S1203	A	D	3B
S1210	A	D	1B


PB10985 -01-01
CN1204
5
2
4
A
B
C
S1203
OPERATE
S1210
TIMER
R1230
L1205
D1236
L1202
CN1203
6
1
C1216
C1214
J1203
AUDIO
J1201
VIDEO
D1235
L1204
R1231
36
SW/JACK PWB ASS'Y
1
2
3

— DISPLAY —

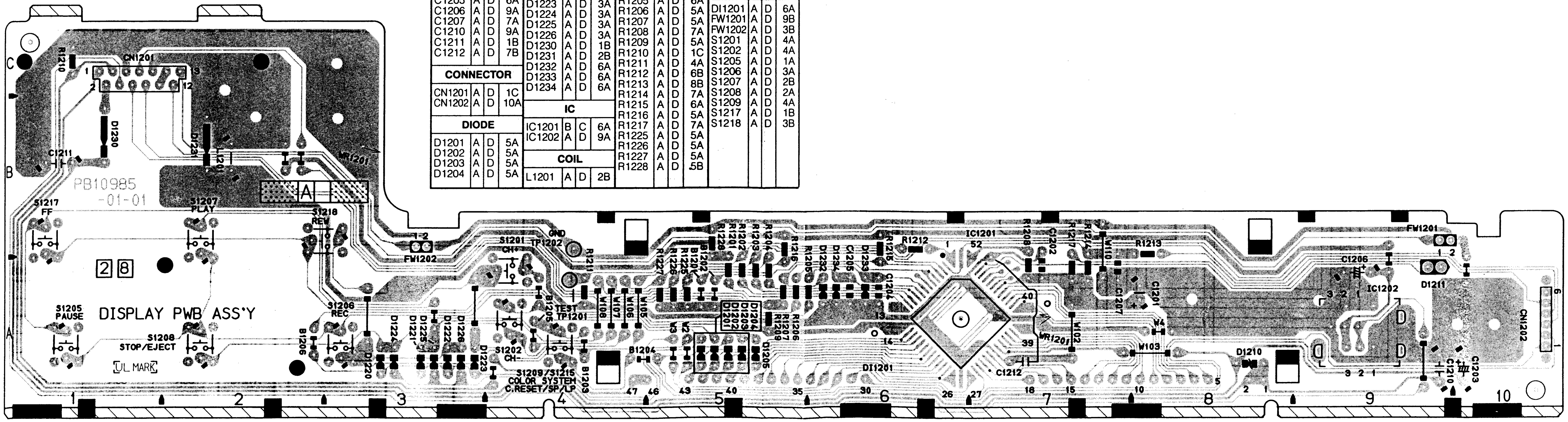
COMPONENT PARTS LOCATION GUIDE <DISPLAY>

REF.NO.	LOCATION		
CAPACITOR			
C1201	A	D	8A
C1202	A	D	7A
C1203	A	D	10A
C1204	A	D	6A
C1205	A	D	6A
C1206	A	D	9A
C1207	A	D	7A
C1210	A	D	9A
C1211	A	D	1B
C1212	A	D	7B
CONNECTOR			
CN1201	A	D	1C
CN1202	A	D	10A
DIODE			
D1201	A	D	5A
D1202	A	D	5A
D1203	A	D	5A
D1204	A	D	5A

REF.NO.	LOCATION		
D1205	A	D	5A
D1210	A	D	8A
D1211	A	D	9A
D1220	A	D	3A
D1221	A	D	3A
D1222	A	D	3A
D1223	A	D	3A
D1224	A	D	3A
D1225	A	D	3A
D1226	A	D	3A
D1230	A	D	1B
D1231	A	D	2B
D1232	A	D	6A
D1233	A	D	6A
D1234	A	D	6A
IC			
IC1201	B	C	6A
IC1202	A	D	9A
COIL			
L1201	A	D	2B

REF.NO.	LOCATION		
RESISTOR			
R1201	A	D	5A
R1202	A	D	5A
R1203	A	D	5A
R1204	A	D	5A
R1205	A	D	6A
R1206	A	D	5A
R1207	A	D	5A
R1208	A	D	7A
R1209	A	D	5A
R1210	A	D	1C
R1211	A	D	4A
R1212	A	D	6B
R1213	A	D	8B
R1214	A	D	7A
R1215	A	D	6A
R1216	A	D	5A
R1217	A	D	7A
R1225	A	D	5A
R1226	A	D	5A
R1227	A	D	5A
R1228	A	D	5B

REF.NO.	LOCATION		
TEST POINT			
TP1201	A	D	4A
TP1202	A	D	4B
OTHERS			
DI1201	A	D	6A
FW1201	A	D	9B
FW1202	A	D	3B
S1201	A	D	4A
S1202	A	D	4A
S1205	A	D	1A
S1206	A	D	3A
S1207	A	D	2B
S1208	A	D	2A
S1209	A	D	4A
S1217	A	D	1B
S1218	A	D	3B


C
B
A
R1210
CN1201
1
2
13
12
D1230
C1211
D1231
L1201
VR1201
A
PB10985 -01-01
S1217
FF
S1207
PLAY
S1218
REV
28
S1205
PAUSE
DISPLAY PWB ASS'Y
S1206
REC
S1208
STOP/EJECT
UL MARK
B1206
FW1202
1 2
S1201
CH+
GND
TP1202
TEST
TP1201
B1205
S1202
CH-
S1209/S1215
COLOR SYSTEM
C.RESET/SP/LP
B1203
B1204
W108
W107
W106
W105
D1220
D1221
D1222
D1224
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D1223
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R1227
R1228
R1201
R1202
R1203
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R1225
R1226
R1216
R1206
D1232
D1233
D1234
C1205
C1204
D1201
D1202
D1203
D1204
D1205
R1207
R1209
R1205
R1215
R1212
IC1201
52
1
40
39
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VR1201
R1208
C1202
R1217
W110
W102
R1213
C1207
C1201
W4
W103
DI1201
C1212
D1210
FW1201
1 2
C1206
IC1202
3 2 1
D1211
CN1202
6
1
C1210
C1203
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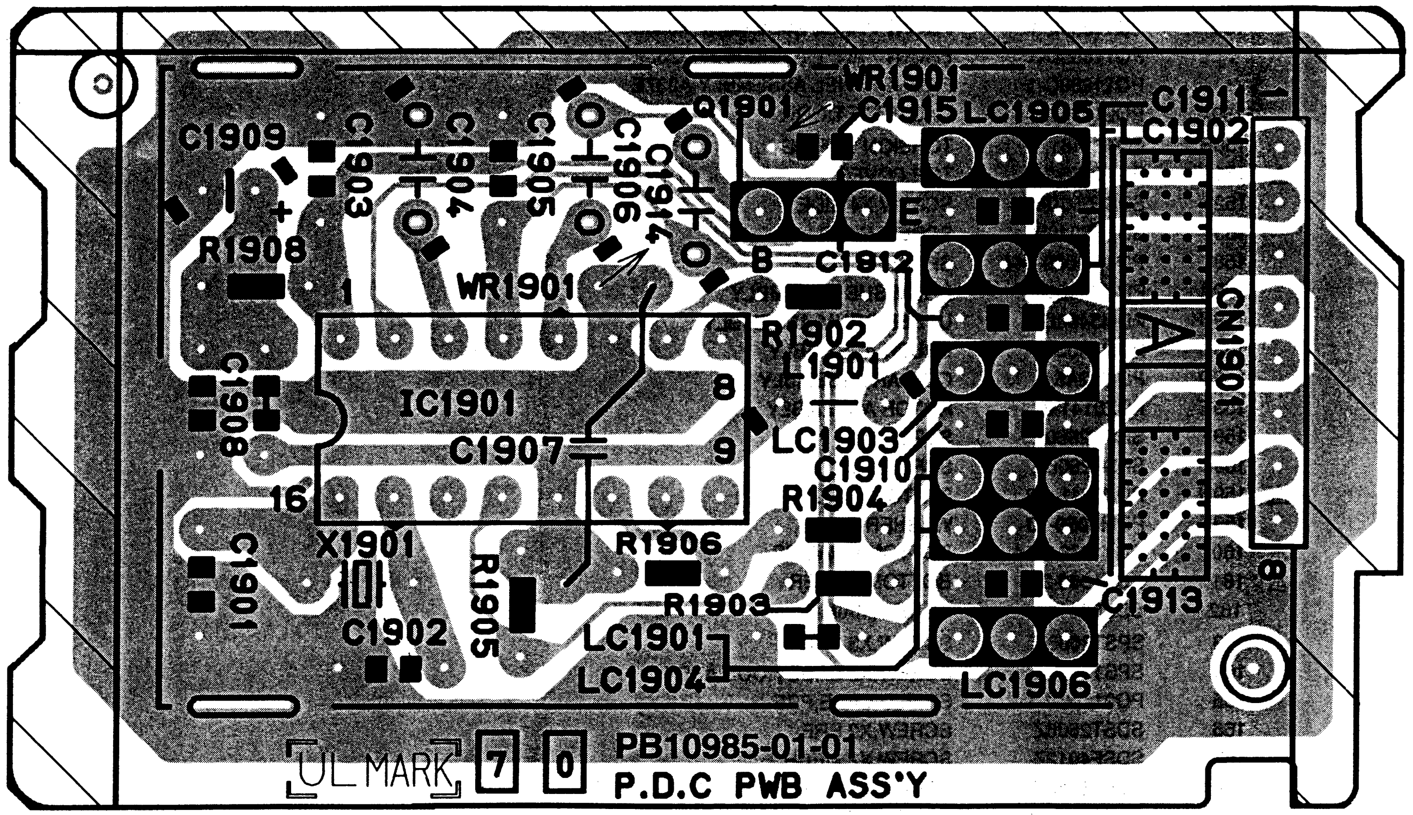
4.19 PDC CIRCUIT BOARD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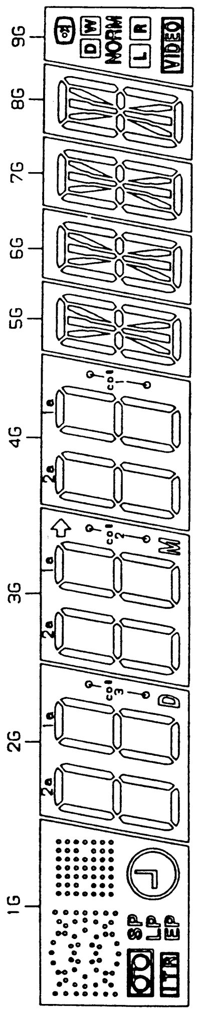
C1912
R1908
WR1901
1
R1902
L1901
CN1901
IC1901
8
C1908
C1907
9
LC1903
C1910
16
R1904
X1901
R1906
C1901
R1905
R1903
C1913
C1902
LC1901
LC1904
LC1906
UL MARK
7
0
PB10985-01-01
P.D.C PWB ASS'Y

4.20 FDP GRID ASSIGNMENT, SEGMENT DESIGNATION AND ANODE CONNECTION

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G
P1	S1	2a	2a	2a	a	a	a	a	⊗
P2	S2	2b	2b	2b	b	b	b	b	D
P3	S4	2f	2f	2f	f	f	f	f	W
P4	S5	2g	2g	2g	h	h	h	h	NORM
P5	S3	2c	2c	2c	j	j	j	j	L
P6	S6	2e	2e	2e	k	k	k	k	R
P7	S7	2d	2d	2d	g	g	g	g	VIDEO
P8	S8	D	M	-	m	m	m	m	-
P9	S12	1a	1a	1a	c	c	c	c	-
P10	S9	1b	1b	1b	e	e	e	e	-
P11	S11	1f	1f	1f	n	n	n	n	-
P12	S10	1g	1g	1g	p	p	p	p	-
P13	OO	1c	1c	1c	r	r	r	r	-
P14	SP	1e	1e	1e	d	d	d	d	-
P15	LP	1d	1d	1d	i	-	-	-	-
P16	◷	col3	col2	col1	-	-	-	-	-
P17	EP	-	⇧	-	-	-	-	-	-
P18	LTR	-	-	-	-	-	-	-	-

GRID ASSIGNMENT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8G
7G
6G
5G
4G
3G
2G
1G
D
W
NORM
L
R
VIDEO
SP
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EP
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M
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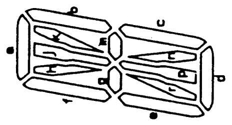

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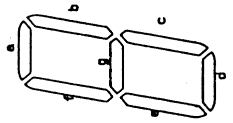

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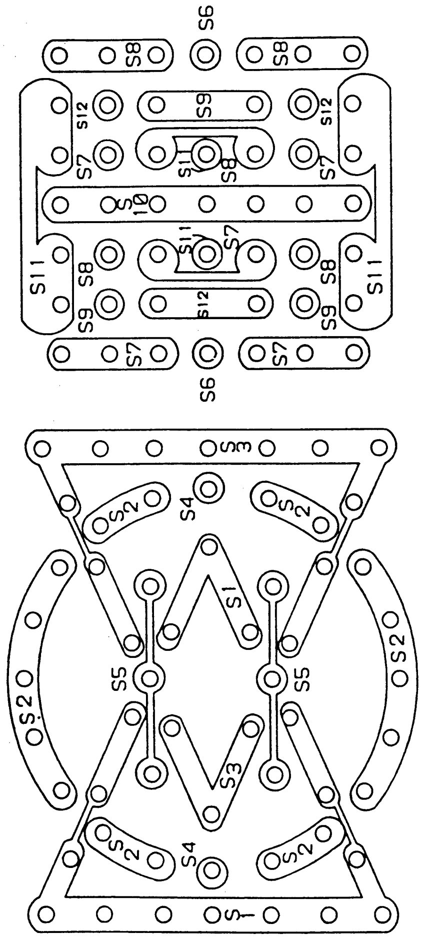

S6
S8
S12
S9
S7
S11
S10
S1
S2
S3
S4
S5

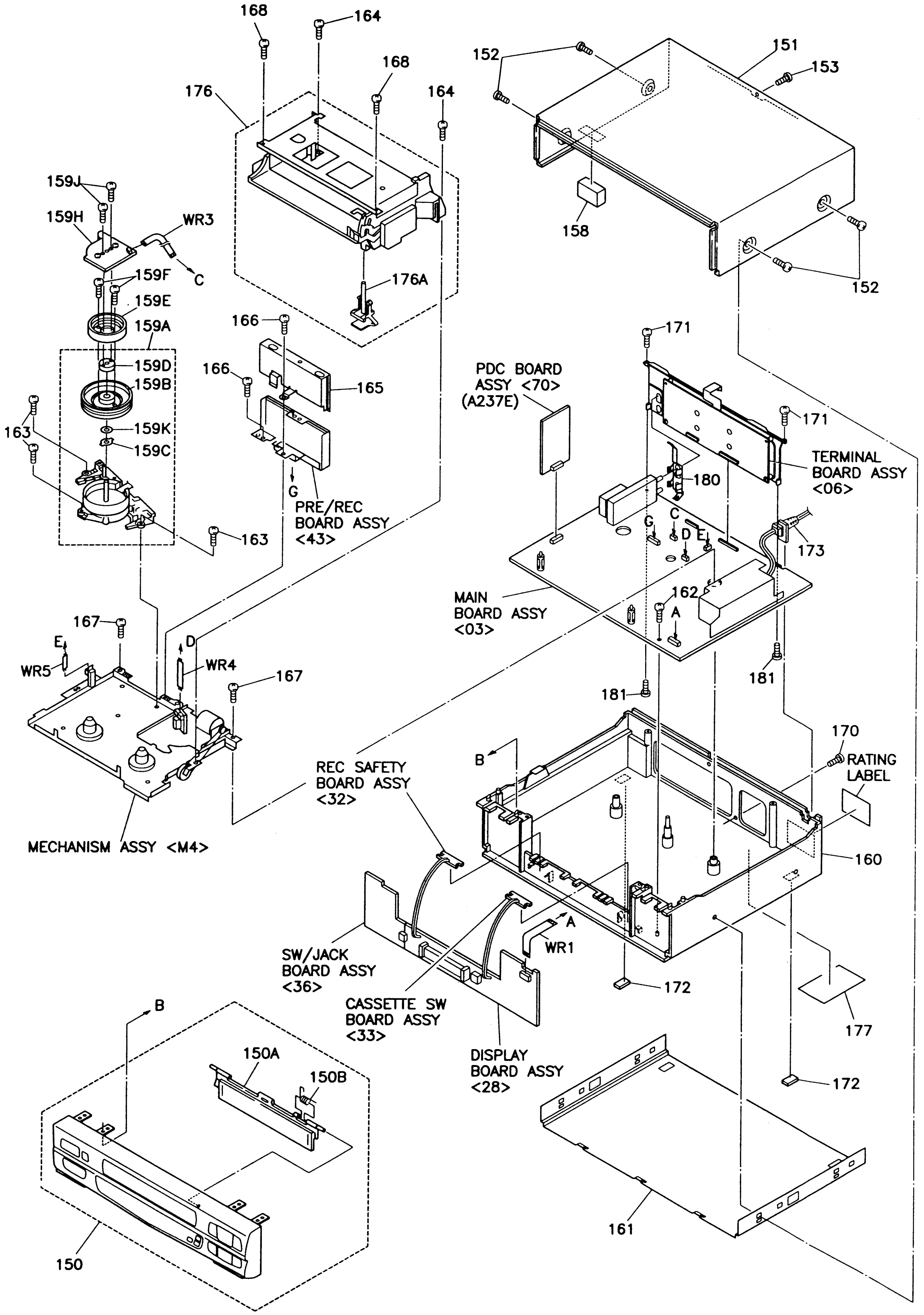
(9G)

SECTION 5
PARTS LIST

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.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159H
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176A
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(A237E)
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BOARD ASSY
<28>
172
161
150

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
********************************			
			CABINET AND CHASSIS ASSEMBLY <M2>
	150	PQ11889E-1	FRONT PANEL ASSEMBLY,A230E
		PQ11889D-1	FRONT PANEL ASSEMBLY,A233E
		PQ11889C-1	FRONT PANEL ASSEMBLY,A237E
	150A	PQ21898-2	CASSETTE DOOR
	150B	PQ46448	TORSION SPRING
⚠	151	PQ11676-7	TOP COVER
	152	SDSF3010M	SCREW,X4 SIDE
	153	SDSF3010M	SCREW,REAR
	158	PQM30029-244	SPACER
	159A	PDM2282Q	DRUM SUB ASSEMBLY
	159B	PDM3403D	UPPER DRUM ASSEMBLY
	159C	PDM4400A	BRUSH ASSEMBLY
	159D	PDM4345A	COLLAR ASSEMBLY
	159E	PDZ0141-2	ROTOR ASSEMBLY
	159F	SPSH2660Z	SCREW,X2
	159J	SPSP2606Z	SCREW,X2
⚠	159H	PDZ0141-1-2	STATOR ASSEMBLY
	159K	PDM4050-10	WASHER
⚠	160	PQ11666-3-14	BOTTOM CHASSIS
⚠	161	PQ11668-2	BOTTOM COVER
	162	SDSF3010Z	SCREW,MAIN
	163	SPST2608Z	SCREW,X3 DRUM
	164	SPST2610Z	SCREW,X2 CASS HOUS ASSY
	165	PQ21740-1-1	SHIELD CASE,PRE
	166	SDST2606Z	SCREW,X2 PRE
	167	SDSF4012Z	SCREW,X2 MECH
	168	SDSF3010Z	SCREW,X2 CASS HOUS ASSY
	170	SDSF3010M	SCREW,TERMINAL
	171	SDSF3010Z	SCREW,X2 TERMINAL
	172	PQ43013-3	FOOT,X2
⚠	173	QMP4A10-170	POWER CORD
	176	PUS29724D	CASSETTE HOUSING ASSY
	176A	PQ46359	CASSETTE SWITCH PIN
⚠	177	PQ46485	SPACER(SAFETY)
	180	PQ21623-1-2	EARTH PLATE(RF)
	181	SDSF3008Z	SCREW,X2 EARTH PLATE
	WR1	PW30802-1314	WIRE, SW/DISP CN1201
	WR3	PW30803-0414	WIRE,DRUM
	WR4	PW30101-C0HH887	WIRE,A/C HEAD
	WR5	PW30101-P0HH882	WIRE,FE HEAD

5.4 ELECTRICAL PARTS LIST

****

DISPLAY BOARD ASSEMBLY <28>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PW1	PB10985C1-01	DISPLAY BOARD ASSEMBLY,A230E	
		PB10985D1-01	DISPLAY BOARD ASSEMBLY,A233E	
		PB10985E1-01	DISPLAY BOARD ASSEMBLY,A237E	
	IC1201	UPD16311GC(P)	IC	
		or UPD16311GC(K)	IC	
		or UPD16311GC(E)	IC	
	IC1202	SPS-442-1	IR DETECT UNIT	
		or GP1U581X	IR DETECT UNIT	
		or HC-377J	IR DETECT UNIT	
	D1201	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1202	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1203	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1204	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1205	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1210	RD3.3ES-T1B2	ZENER DIODE	
	D1220	1N4148M	DIODE	
		or 1SS132Y	DIODE	
	D1223	1N4148M	DIODE,A230E	
		or 1SS132Y	DIODE,A230E	
	D1224	1N4148M	DIODE,A233E	
		or 1SS132Y	DIODE,A233E	
	D1225	1N4148M	DIODE,A230E	
		or 1SS132Y	DIODE,A230E	
	R1201	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1202	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1203	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1204	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1205	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R1206	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R1207	QRD161J-102	RESISTOR	1kΩ,1/6W
	R1208	QRD161J-563	RESISTOR	56kΩ,1/6W
	R1209	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1210	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1211	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1212	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R1215	QRD161J-333	RESISTOR,A230E,A233E	33kΩ,1/6W
	R1216	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1225	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1226	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1227	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1228	QRD161J-333	RESISTOR	33kΩ,1/6W
	C1201	QEKJ1CM-336	E CAPACITOR	33μF,16V
	C1202	QCFB1HZ-104	CAPACITOR	0.1μF,50V
	C1203	QETC1HM-106	E CAPACITOR	10μF,50V
	C1204	QCSB1HJ-330	CAPACITOR	33pF,50V
	C1205	QCSB1HJ-330	CAPACITOR	33pF,50V
	C1206	QETC0JM-227	E CAPACITOR	220μF,6.3V
	C1210	QCC11EJ-473	CAPACITOR	0.047μF,25V
	C1211	QCC11EJ-473	CAPACITOR	0.047μF,25V
	L1201	PU48530-101K	COIL	100μH
	S1201	PESW0525-02Z	TACT SWITCH,CH +	
	S1202	PESW0525-02Z	TACT SWITCH,CH −	
	S1205	PESW0525-02Z	TACT SWITCH,PAUSE	
	S1206	PESW0525-02Z	TACT SWITCH,REC/ITR	
	S1207	PESW0525-02Z	TACT SWITCH,PLAY	
	S1208	PESW0525-02Z	TACT SWITCH,STOP/EJECT	
	S1209	PESW0525-02Z	TACT SWITCH,C.RESET	
	S1217	PESW0525-02Z	TACT SWITCH,FF	
	S1218	PESW0525-02Z	TACT SWITCH,REW	
	DI1201	PEDP0189	FLUORESCENT DISPLAY PANEL	
	HD3	PQ34668	FDP HOLDER(L)	
	HD4	PQ34669	FDP HOLDER(R)	
	FW1201	PW30101-60AA442	PARALLEL WIRE,REC SAFETY	
	FW1202	PW30101-60AA442	PARALLEL WIRE,CASSETTE SWITCH	
	CN1201	PEMC1101-113	CONNECTOR,(1-13)MAIN	
	CN1202	PEMC0724-006	CONNECTOR,(1-6)SW/JACK	

****

REC SAFETY BOARD ASSEMBLY <32>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PW3	PB10985A3	REC SAFETY BOARD ASSEMBLY
	S1241	PESW0589	PUSH SWITCH,REC SAFETY

****

CASSETTE SW BOARD ASSEMBLY <33>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PW4	PB10985A4	CASSETTE SW BOARD ASSEMBLY
	S1242	PU61320	PUSH SWITCH,CASS SWITCH

****

SW/JACK BOARD ASSEMBLY <36>

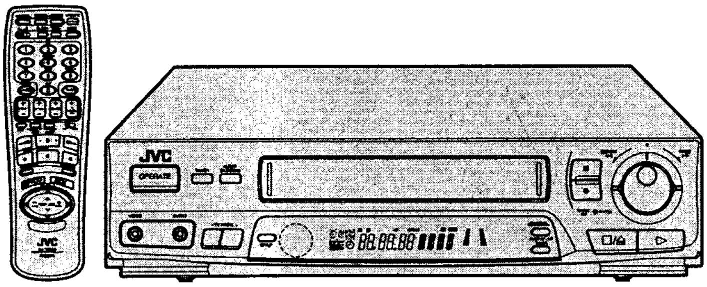
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PW2	PB10985A2-01	SW/JACK BOARD ASSEMBLY
	S1203	PESW0525-02Z	TACT SWITCH,OPERATE
	S1210	PESW0525-02Z	TACT SWITCH,TIMER
	CN1203	PEMC0723-006	CONNECTOR,(1-6)DISPLAY

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J238E



SHOWVIEW

VHS
PAL

SPECIFICATIONS

GENERAL

Power requirement	: AC 220 – 240 V∿, 50/60 Hz
Power consumption	: 20 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 340 mm
Weight	: 4.3 kg
Format	: VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP) [J438E only]	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: DA4 (Double Azimuth) head helical scan system (HR-J438E) Rotary two-head helical scan system (HR-J238E)
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector x 2 (IN/OUT x 1, IN/DECODER x 1) RCA connector x 1 (IN x 1) [J438E only]

TUNER/TIMER

TV channel storage capacity	: 99 positions (+AUX position "AU")
Tuning system	: Frequency synthesized tuner
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470MHz UHF 470 – 862MHz
Aerial output	: UHF channel 36 (Adjustable 32 – 40)
Memory backup time	: Approx. 60 min.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

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No. 82530
April 1996

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6 TECHNICAL INFORMATION

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

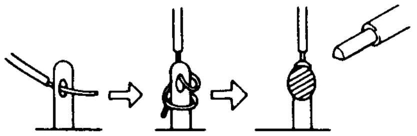


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

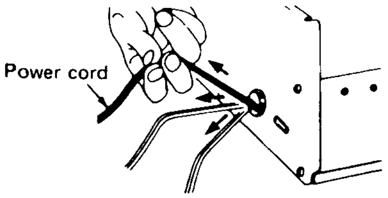


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

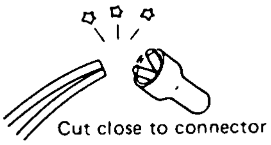


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

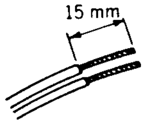


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

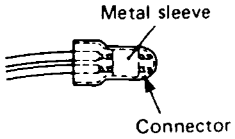


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

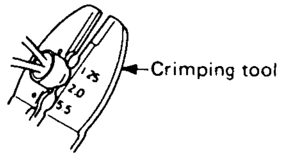


Fig. 6

(5) Check the four points noted in Fig. 7.

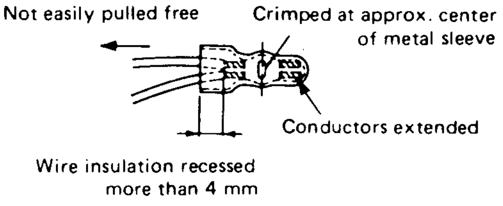

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

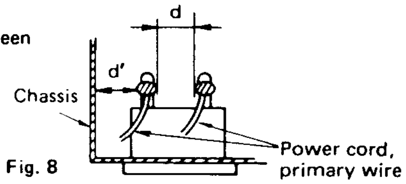


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method: (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

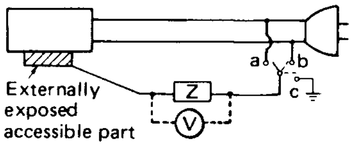


Fig. 9

5. **Grounding (Class I model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

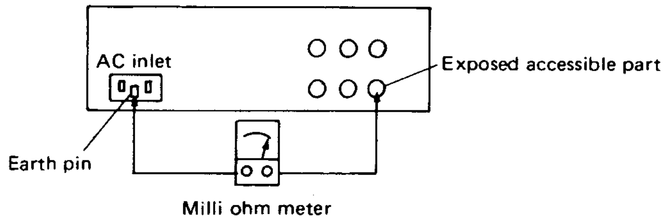


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Powercord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

WARNING

There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

For Italy:

"It is declared that this product, brand JVC, conforms to the Ministry Decree n. 548 of 28 Aug.'95 published in the Official Gazette of the Italian Republic n. 301 of 28 Dec.'95"

- Only cassettes marked "VHS" can be used with this videorecorder.
- HQ VHS is compatible with existing VHS equipment.
- ShowView is a trademark applied for by Gemstar Development Corporation. The ShowView system is manufactured under licence from Gemstar Development Corporation.

IMPORTANT

- Please read the various precautions on this page before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder (J438E only).

Failure to heed the following precautions may result in damage to the recorder, remote control or video cassette.

1. **DO NOT place the recorder . . .**
   ... in an environment prone to extreme temperatures or humidity.
   ... in direct sunlight.
   ... in a dusty environment.
   ... in an environment where strong magnetic fields are generated.
   ... on a surface that is unstable or subject to vibration.
2. **DO NOT block the recorder's ventilation openings.**
3. **DO NOT place heavy objects on the recorder or remote control.**
4. **DO NOT place anything which might spill on top of the recorder or remote control.**
5. **AVOID violent shocks to the recorder during transport.**

MOISTURE CONDENSATION

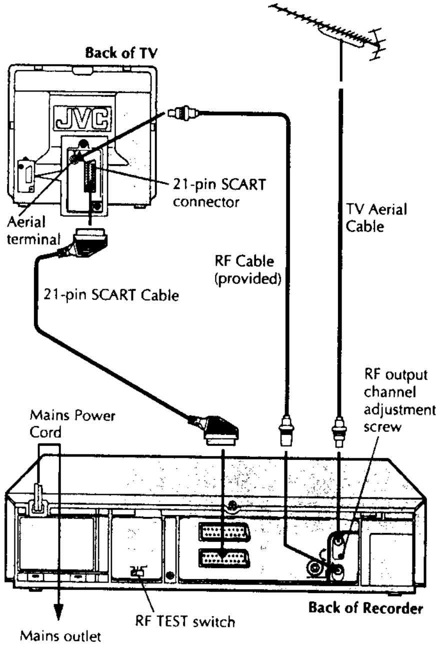
Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder turned on for a few hours to let the moisture dry.

ABOUT HEAD CLEANING

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

Basic Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.



1 CHECK CONTENTS

Make sure the package contains all of the accessories listed in "Specifications" (☞ pg. 35).

2 SITUATE RECORDER

Place the recorder on a stable, horizontal surface.

3 CONNECT RECORDER TO TV

The connection method you use depends on the type of TV you have.

RF CONNECTION

- *To Connect To A TV With NO AV Input Terminals . . .*
  - a– Disconnect the TV aerial cable from the TV.
  - b– Connect the TV aerial cable to the ANT. IN jack on the rear panel of the recorder.
  - c– Connect the provided RF cable between the RF OUT jack on the rear panel of the recorder and the TV's aerial terminal.

Before operating the recorder, make sure the TV's channel is set to the VIDEO channel.

AV CONNECTION

- *To Connect To A TV With AV Input Terminals . . .*
  - a– Connect the aerial, recorder and TV as per "RF CONNECTION".
  - b– Connect an optional SCART cable between the AV1 IN/OUT socket on the rear panel of the recorder and the TV's 21-pin SCART connector.
  - c– Set the RF TEST switch to OFF.

Before operating the recorder, make sure the TV is set to the VIDEO (or AV) mode.

4 CONNECT RECORDER TO MAINS

Plug the end of the mains power cord into a mains outlet.

Tune The TV To Your Video Recorder

The video recorder sends picture and sound signals via the RF connecting cable to your TV on UHF channel 36.

1 TURN ON THE RECORDER

Press **OPERATE**.

2 SELECT OUTPUT MODE

Set the **RF TEST** switch on the back of the recorder to ON.

CONTINUED ON NEXT PAGE.

3 SET TV CHANNEL

Set your TV to the video channel (UHF channel 36). Two white bars appear on screen vertically.

- Tune the TV until the bars are as clear as they can be.
- Your TV should be set to the channel designated for use with a video recorder, or to a spare channel if there is not a specified video channel on your TV.

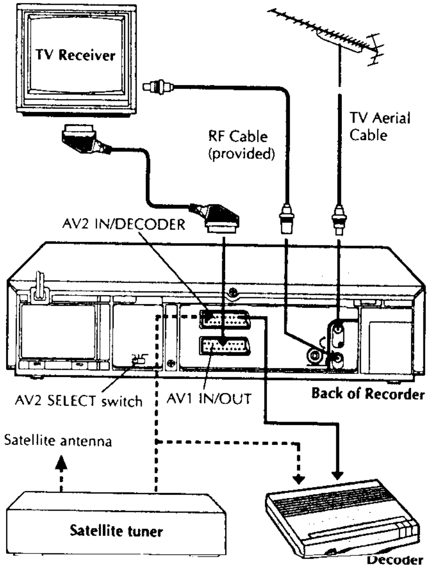
4 RESET OUTPUT MODE

Return the **RF TEST** switch to OFF.

NOTES:

- *If CH36 is occupied by a local station, adjust the RF output channel adjustment screw to use another channel between CH32 and CH40 instead.*
- *If some interference noise is continually seen on the screen, consult your JVC dealer.*

Connecting/ Using A Decoder



The AV2 IN/DECODER connector can be used as an input terminal for an external decoder (descrambler). Simply connect a decoder and you can enjoy the variety of programming that is available through scrambled channels.

1 SELECT INPUT MODE

Set the **AV2 SELECT** switch to "DECODER".

2 CONNECT DECODER

Connect your recorder's AV2 IN/DECODER connector to the decoder's Euroconnector using a 21-pin SCART cable.

3 SET TUNER

Follow the procedure starting on page 5.

NOTES:

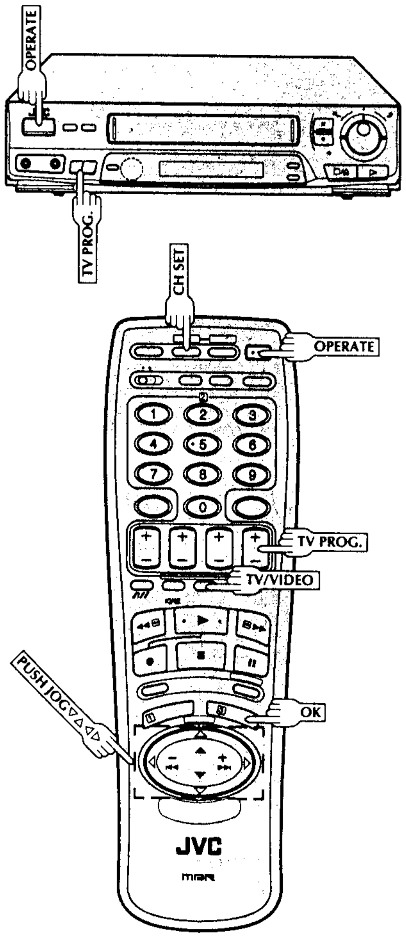
When Connecting A Satellite Tuner . . .

. . . connect it to the decoder, or if you don't have a decoder connect the satellite tuner directly to the video recorder.

*. . . set the **AV2 SELECT** switch to "AV2".*

*. . . to view a programme via the satellite tuner, select AU 2 mode by pressing **TV PROG.** until "AU 2" appears on the display panel.*

Tuner Set



Your recorder needs to memorise all necessary stations in channel positions in order to record TV programmes. ATS+ (Auto Tuning System) automatically assigns all receivable stations in your area to call them up with the **TV PROG.** buttons without going through any vacant channels.

The following procedure describes how to select automatic channel setting.

1 TURN ON THE RECORDER

Press **OPERATE.**

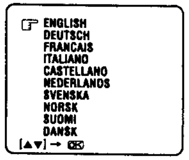
- If your recorder is connected to the TV via AV connection, press **TV/VIDEO** to select the VIDEO mode.

2 ACCESS LANGUAGE SCREEN

Press and hold **CH SET** for more than 2 seconds. The Language screen appears.

3 SELECT LANGUAGE

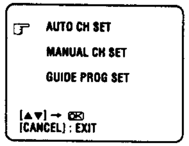
Press **PUSH JOG**△▽ to place the pointer next to the language of your choice, then press **OK** to enter your selection. The Ch. Set mode menu appears.



ENGLISH
DEUTSCH
FRANCAIS
ITALIANO
CASTELLANO
NEDERLANDS
SVENSKA
NORSK
SUOMI
DANSK
[▲▼] → OK

4 SELECT MODE

"AUTO CH SET" is the necessary mode for this procedure, so simply press **OK** to enter the selection. The Country select screen appears.



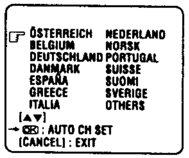
AUTO CH SET
MANUAL CH SET
GUIDE PROG SET

[▲▼] → OK
[CANCEL] : EXIT

5 SELECT COUNTRY

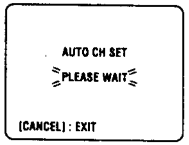
Press **PUSH JOG**△▽ to place the pointer next to your country's name, then press **OK** to initiate Auto Channel Set.

- As the recorder searches for receivable stations, it displays broadcasts from the stations for a few seconds as it locates them.



ÖSTERREICH	NEDERLAND
BELGIUM	NORSK
DEUTSCHLAND	PORTUGAL
DANMARK	SUISSE
ESPAÑA	SUOMI
GREECE	SVERIGE
ITALIA	OTHERS

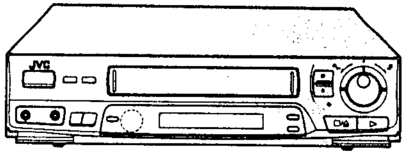
[▲▼]
→ OK : AUTO CH SET
[CANCEL] : EXIT

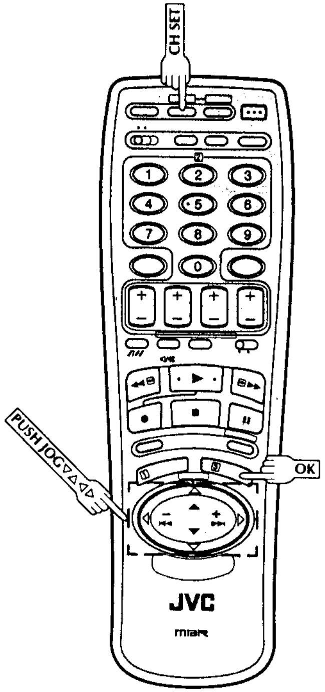


AUTO CH SET
PLEASE WAIT

[CANCEL] : EXIT

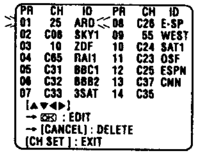
CONTINUED ON NEXT PAGE.





6 VIEW CONFIRMATION SCREEN

The stations your recorder located appear on a Confirmation screen — channel positions (PR), channels (CH) and station names (ID- ☞ pg. 31). To view the next page of the listing, press **PUSH JOG**△▽◁▷. The blueback screen and the program currently being broadcast by the highlighted station appear alternately for 5 seconds each.



```
PR   CH   ID    PR   CH   ID
01   25   ARD   08   C26  E-SP
02   C08  SKY1  09    55  WEST
03   10   ZDF   10   C24  SAT1
04   C65  RAI1  11   C23  OSF
05   C31  BBC1  12   C25  ESPN
06   C32  BBC2  13   C37  CNN
07   C33  3SAT  14   C35
 [▲▼◀▶]
 → OK : EDIT
 → [CANCEL] : DELETE
[CH SET ] : EXIT
```

- The stations located in the selected country appear at the top of the list.

7 RETURN TO NORMAL SCREEN

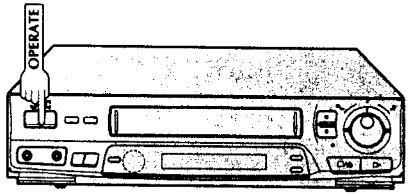
Press **CH SET**.

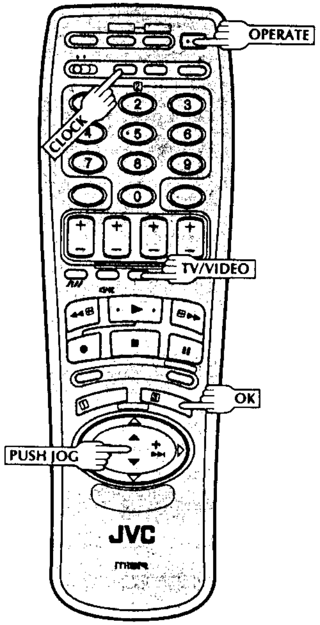
- Depending on the reception conditions, the stations may not be stored in order, and the station names may not be stored correctly.
- Using the Confirmation screen, you can skip or add channel positions, enter station names and perform other operations. Refer to page 29 for the procedures.
- For information on scrambled broadcasts, refer to page 29.

NOTES:

- *Fine tuning is performed automatically when you select "AUTO CH SET". If you want to perform it manually, refer to page 30.*
- *To set the tuner manually, refer to "Storing Channels Manually" (☞ pg. 29).*

Clock Set





If you performed Auto Channel Set (☞ pg. 5), the recorder's built-in clock is also set automatically. The Auto and Manual clock setting procedures are necessary when . . .

- a power outage of more than 60 minutes occurs.
- the tuner has been set manually.
- the user desires to set the clock slightly ahead of the actual time.
- the clock was not set even after Auto Tuner Set was performed.

Whether you perform Auto or Manual clock setting, you can use the convenient Just Clock function.

Just Clock

The Just Clock function provides accurate time keeping through automatic adjustments at regular intervals, by reading data from a PDC signal.

The Just Clock option appears in the Clock Set and Auto Clock screens, and can be set "ON" or "OFF" (the default setting is "ON"). Press **OK** until the Just Clock setting begins blinking, then press **PUSH JOG**△▽ to change the setting.

IMPORTANT: If you turn off Just Clock off, the accuracy of your recorder's built-in clock may be reduced, which could adversely effect timer recording.

Both Auto and Manual clock setting procedures begin from step 3.

Preparation

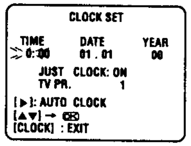
1 TURN THE RECORDER ON

Press **OPERATE**.

- If your recorder is connected to the TV via AV connection, press **TV/VIDEO** to select the VIDEO mode.

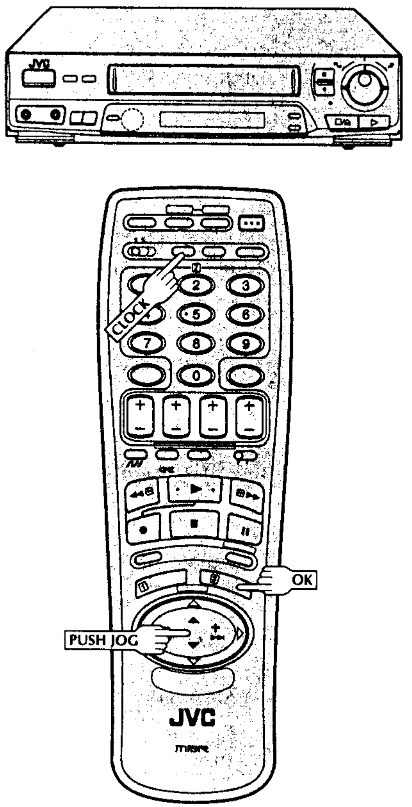
2 ACCESS CLOCK SET SCREEN

Press **CLOCK** on the remote control. The Clock Set screen appears.



```
         CLOCK SET
  TIME      DATE      YEAR
 0:00      01 . 01     00
     JUST  CLOCK: ON
     TV PR.         1
[▶]: AUTO  CLOCK
[▲▼] → OK
[CLOCK]  : EXIT
```

CONTINUED ON NEXT PAGE.



NOTES:

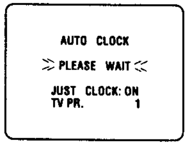
- *Just Clock (when set to "ON") enables adjustment of the recorder's built-in clock every hour on the hour, except for 11 o'clock in the evening and midnight.*
- *Just Clock is not effective when . . .*
  - *the recorder's power is on (unless the recorder is tuned to the same channel position selected in the Clock Set screen). the recorder is in the Timer mode.*
  - *a difference of more than 3 minutes exists between the built-in clock's time and the actual time.*
- *The recorder's clock is automatically adjusted at the start/end of Summer Time.*
- *Auto clock setting and Just Clock may not function properly depending on the reception condition.*
- *During Manual clock setting, if the day and month data are invalid (such as 31st April), the month digits are cleared automatically and the day digits begin blinking. Input the correct data.*
- *If, in step **3** of the Manual clock setting procedure, the year digits are automatically cleared and the day digits begin blinking, it is possible that you have input 29th February for a non-leap year. Input the correct data.*

Auto Clock Set

3

SET CLOCK AUTOMATICALLY

At the Clock Set screen press **PUSH JOG ▷**. The Auto Clock screen appears and clock setting begins.



AUTO CLOCK

≫ PLEASE WAIT ≪

JUST CLOCK: ON
TV PR. 1

- If "TV PR." isn't set to the channel position on which Auto Clock data is received, "ERROR" appears, and then the screen from step **2** reappears. To set "TV PR.", press **OK** to place the pointer next to it, then cycle through the numbers by pressing **PUSH JOG△▽** until the number representing the channel position in which the station transmitting clock setting data is stored appears.

4

RETURN TO NORMAL SCREEN

Once clock setting is completed, press **CLOCK** to return to the normal screen.

Manual Clock Set

3

SET DATE AND TIME

Press **PUSH JOG△▽** to set the hour, then press **OK**. The "minutes" display begins blinking. Repeat the procedure to set the minutes, day, month and year.

4

SET JUST CLOCK

The default setting is "ON". Set as desired by pressing **PUSH JOG△▽**, then press **OK**.

- If you set to "OFF", you can disregard the next step as you won't be able to receive regular clock adjustments.

5

SET CLOCK DATA SOURCE CHANNEL POSITION

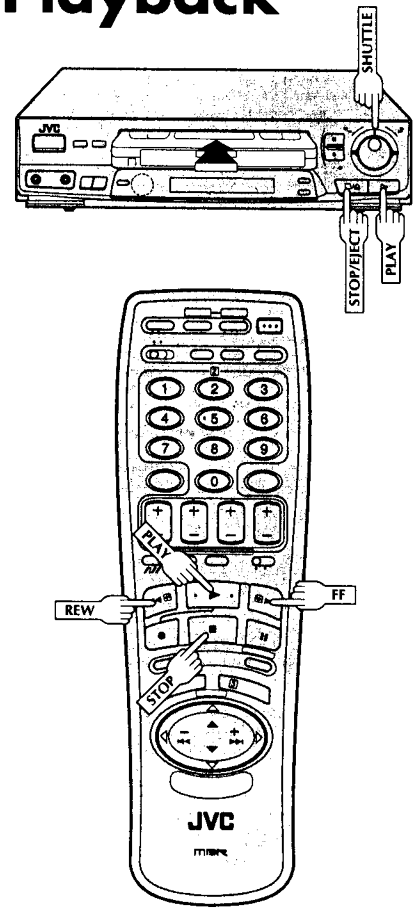
The recorder is preset to receive clock setting and adjustment data from channel position 1. Press **PUSH JOG△▽** to set the channel position to the number representing the station transmitting clock setting data, then press **OK**.

6

START CLOCK OPERATION

Press **CLOCK**.

Basic Playback



The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.

1

LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is point toward the recorder. Don't apply too much pressure when inserting.

- The recorder power comes on automatically and the counter is reset to 0:00:00.
- If the record safety tab has been removed, playback begins automatically.

2

FIND PROGRAMME START POINT

If the tape is advanced past the start point, press **REW** or turn the **SHUTTLE** ring to the left and release it.
To go forward, press **FF** or turn the **SHUTTLE** ring to the right and release it.

3

START PLAYBACK

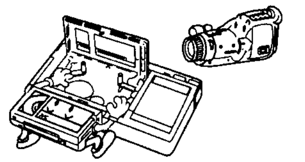
Press **PLAY**. "BEST" appears blinking in the recorder's display panel for 5 seconds. (☞ pg. 15)

4

STOP PLAYBACK

Press **STOP** on the remote or **STOP/EJECT** on the recorder's front panel. Then press **STOP/EJECT** to remove the cassette.

Usable cassettes



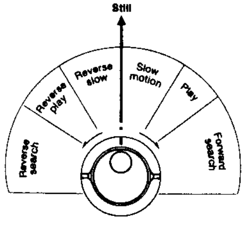
- Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
- This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Playback Features

Take advantage of special functions possible with the recorder's controls or the remote control.

NOTE:

Refer to the ***SHUTTLE*** *ring illustration below as you read the following procedures.*



Still Picture/Frame-By-Frame Playback

1

PAUSE DURING PLAYBACK

Press **PAUSE.** If there is vertical jitter, use the **TV PROG.** buttons to correct the picture.

2

ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback. [J438E only]

OR

Press **PAUSE**.

OR

Press **PUSH JOG** ◁ or ▷.

To resume normal playback, press **PLAY**.

Slow Motion

1

ACTIVATE SLOW-MOTION PLAYBACK

During playback or still, turn the **SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion (refer to the illustration to the left).

OR

During still picture, press **PAUSE** and hold for 2 seconds, then release. Press and release again to return to still picture.

OR

During still picture, press and hold **PUSH JOG** ◁ or ▷. Release to return to still picture.

To resume normal playback, press **PLAY**.

Variable-Speed Search

1

ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring to the right for forward variable-speed search, or to the left for reverse variable-speed search (refer to the illustration to the left).

OR

During playback, press **PUSH JOG** ◁ or ▷.

- The more times you press, the faster the playback picture moves.
- To decrease speed, press the button for the opposite direction.

To resume normal playback, press **PLAY**.

High-Speed (Turbo) Search

1

ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring all the way to the right for forward high-speed search, or to the left for reverse high-speed search.

- For forward search with a visible picture, turn the **SHUTTLE** ring all the way to the right and release it within 1 second.
- For reverse search with a visible picture, turn the **SHUTTLE** ring all the way to the left and release it within 1 second.

OR

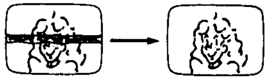
Press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

- For short searches, press and hold **FF** or **REW** for over 2 seconds. When released, normal playback resumes.

To resume normal playback, press **PLAY**.

Manual Tracking

Your video recorder is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the **TV PROG.** buttons.



1

OVERRIDE AUTOMATIC TRACKING

Press **SP/LP (////)** on the remote to engage manual tracking.

2

ADJUST TRACKING MANUALLY

Press **TV PROG.** + or – to adjust tracking.

3

RETURN TO AUTOMATIC TRACKING

Press **SP/LP (////)** on the remote to re-engage automatic tracking.

NOTE:

When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

Instant ReView

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last timer-recorded programme. If you have several programmes recorded, you can easily access any of them.

NOTE:

Before starting, make sure that the recorder is off and that the Timer mode is disengaged.

1

ACTIVATE INSTANT REVIEW

Press **REVIEW**. The recorder power comes on and the recorder searches for the index code indicating the start of the last timer-recorded programme. Once it's found, playback begins automatically.

The front display panel tells you how many programmes have been recorded. If you have, for example, 3 programmes, "REV 3" appears and blinks. To watch the first of the 3 programmes, press **REVIEW** three times. The recorder searches and begins playback automatically. You can access a programme as far as 9 index codes away from the current tape position.

NOTES:

- *Instant ReView is not possible while the recorder is in the Timer mode.*
- *The number displayed to the right of "REV" may not match the actual number of timer-recorded programmes when one or more of them is a PDC/VPS recording (☞ pg. 24).*

Repeat Playback

Your video recorder can automatically play back the whole tape 20 times repeatedly.

1

START PLAYBACK

Press **PLAY**.

2

ACTIVATE REPEAT PLAYBACK

Press **PLAY** and hold for over 5 seconds, then release.

- The Play indicator (▷) on the display panel blinks slowly.
- The tape plays 20 times automatically, and then stops.

3

STOP PLAYBACK

Press **STOP** at any time to stop playback.

NOTE:

Pressing ***PLAY, REW, FF*** *or* ***PAUSE*** *also stops Repeat Playback.*

NTSC Playback

Your video recorder is equipped with NTSC circuitry that can play back NTSC tapes.

1

LOAD A CASSETTE

Insert a cassette recorded in NTSC.

2

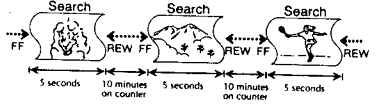
START PLAYBACK

Press **PLAY**. "NT" appears on the display panel.

- Some TVs shrink the picture vertically and place black bars at the top and bottom of the screen. This is not a malfunction on the part of either the video recorder or the TV.
- The picture may roll up and down. This can be corrected using the V-HOLD control found on some TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
- The counter and tape remaining time readings will be incorrect.
- During search, still, or frame-by-frame playback, the picture will be distorted, and there may be a loss of colour.
- Depending on the type of TV, the top and bottom portions of superimposed displays may be cut off during NTSC playback.

Scene Finder

This function helps you check contents of unlabeled recorded tapes at the touch of a single button.



NOTES:

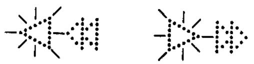
- *Scene Finder cannot be used when the recorder is in the Record mode.*
- *If your recorder is connected to the TV using an AV connection, press **TV/VIDEO** to select the VIDEO mode.*

1

ACTIVATE SCENE FINDER

Press **SCENE FINDER**. The recorder starts forward high-speed search for 5 seconds and then fast-forwards 10 minutes on the counter. This cycle is repeated until the end of the tape is reached.

- To start Scene Finder in the reverse direction, press **SCENE FINDER** and then turn the **SHUTTLE** ring to the left (or press the remote's **REW** button) within 2 seconds. This cycle is repeated until the beginning of the tape.
- During Scene Finder, the following indications appear on the display panel:



2

STOP SCENE FINDER

Press **STOP**.

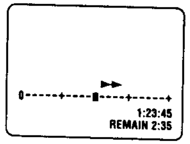
NOTES:

- *During Scene Finder high-speed search, you can also hear the tape sound. During fast forward or rewind, you hear the current TV sound instead.*
- *Scene Finder does not function during Index Search.*

Tape Position Indicator

The tape position indicator appears on screen when, from the Stop mode, you press **FF**, **REW** or perform an Index Search. The position of "■" in relation to "0" (beginning) or "+" (end) shows you where you are on the tape.

"O.S.D." (☞ pg. 17) must be set to "ON", or the indicator will not appear.

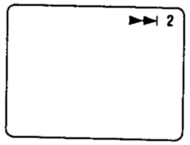


NOTE:

Depending on the type of tape used, there may be times when the indication is not correct.

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.



NOTE:

Before starting, make sure the recorder is in the Stop mode.

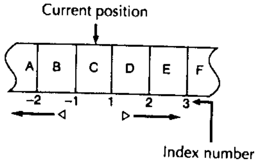
1

ACTIVATE INDEX SEARCH

Press **PUSH JOG** ◁ or ▷ (|◀◀ or ▶▶|). "|◀◀ 1" or "▶▶| 1" is displayed on screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press **PUSH JOG** ◁ or ▷ repeatedly until the correct index number is displayed.

Ex.: To locate the beginning of B from the current position, press **PUSH JOG** ◁ twice.
To locate the beginning of D from the current position, press **PUSH JOG** ▷ once.



- When the specified index code is located, playback begins automatically.

Next Function Memory

You can set your recorder's power to go off automatically after the tape is fully rewound. Before starting, make sure the recorder is in the Stop mode.

For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press **OPERATE** within 2 seconds.

NOTE:

*If you want the power to be turned off automatically when the counter reads "0:00:00" (instead of at the beginning of the tape), press **C.MEMORY** so that the "M" mark appears before pressing **REW**.*

Tape Remaining Time

1

DISPLAY REMAINING TIME

Press **DISPLAY** until the time remaining on the tape appears.

- By pressing the **DISPLAY** button, you can change the display to show the counter reading, tape remaining time, or clock time.

NOTE:

- *Depending on the type of tape used, there may be times when the tape remaining time reading may not appear right away, or is not correct. "- - : - -" may sometimes appear, or the display may blink on occasion.*

Counter Memory

Returns to the counter reading of "0:00:00" to conveniently find a specific place on the tape automatically.

1

SET COUNTER MEMORY

Press **C. RESET** during playback at a point you wish to locate later. The counter reads "0:00:00". Then press **C. MEMORY**, and "M" appears in front of the counter digits.

2

ACTIVATE COUNTER MEMORY

When you wish to return to the designated point, press **STOP** and then **REW** or **FF**.

- The tape rewinds or fast-forwards and stops at about 0:00:00 automatically.
- To cancel Counter Memory, press **C.MEMORY** again.

Information On Colour System

You can also record SECAM signals, or play back a MESECAM tape on this recorder. When a MESECAM tape is played back, "MES" appears on the display panel. MESECAM is the designation for tapes with SECAM signals that have been recorded on a MESECAM-compatible PAL video recorder.

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to the remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1

REMOVE POWER SUPPLY

Unplug the mains power cord from the mains outlet.

2

SET A/B CODE SWITCH

Set to B.

3

RE-SUPPLY POWER

Plug the mains power cord back into the mains outlet.

4

TURN THE RECORDER ON

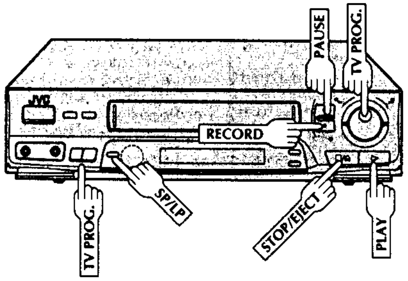
Press **OPERATE** on the remote control. The recorder will now only respond to B code signals.

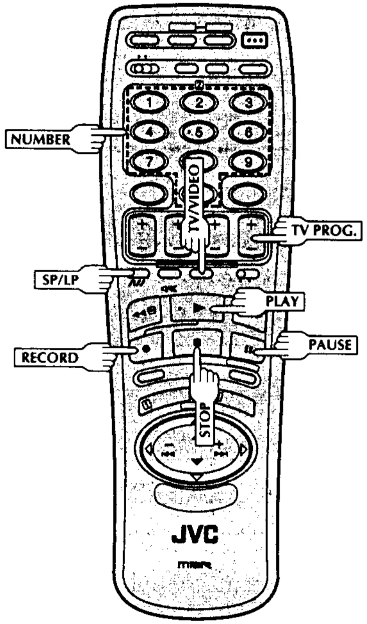
NOTE:

Some TV sets may malfunction in response to the B mode. If this happens, switch back to the A mode.

Basic Recording

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. You can "capture" a TV programme using your video recorder.





1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

- The counter is reset to 0:00:00 and the recorder power comes on automatically.
- If your recorder is connected to the TV via AV connection, press **TV/VIDEO** to select the VIDEO mode.

2 CHOOSE A PROGRAMME

Press **TV PROG. +/–** or the **NUMBER** keys to select the channel you wish to record. The name of the station appears in the recorder's display panel for 5 seconds, followed by the channel position number. (Only stations that appear in the Confirmation screen will be displayed.)

- The **TV PROG.** dial can also be used to select a channel. [J438E only]

3 SET TAPE SPEED (J438E ONLY)

Press **SP/LP**. Check the SP/LP indicator on the recorder display panel to confirm the selected tape speed.

4 START RECORDING

Press and hold **RECORD** and **PLAY** on the remote control, or press **RECORD** on the recorder.

B.E.S.T. takes place at the beginning of both the first SP and the first LP recording after inserting the cassette (☞ pg. 15).

5 PAUSE/RESUME RECORDING

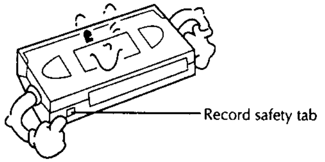
Press **PAUSE**. Press **PLAY** to resume recording.

6 STOP RECORDING

Press **STOP** on the remote control or **STOP/EJECT** on the recorder. Then press **STOP/EJECT** to remove the cassette.

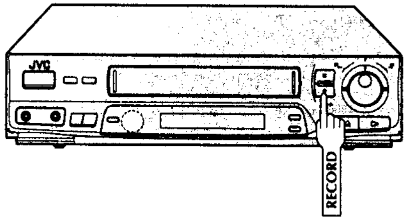
Accidental erasure prevention

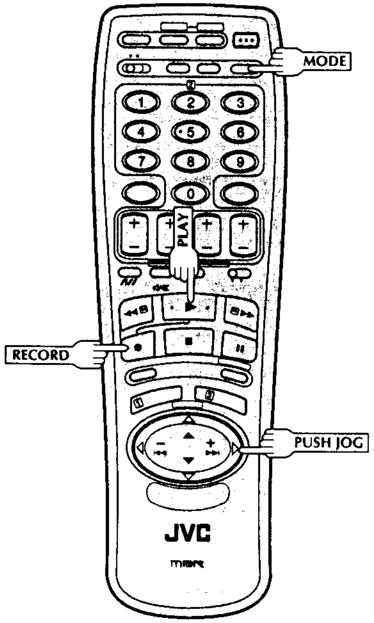
- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



B.E.S.T. Picture System

The B.E.S.T. (Biconditional Equalised Signal Tracking) system checks the condition of the tape in use during recording and playback, and compensates to provide the highest-possible recording and playback pictures. The default setting for both recording and playback is "ON".





Recording

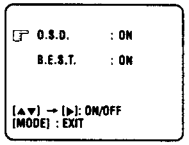
1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

- The recorder power comes on automatically.

2 ACCESS MODE SELECT SCREEN

Press **MODE**. The O.S.D./B.E.S.T. screen appears.



```
☞ O.S.D.      : ON
  B.E.S.T.    : ON

[▲▼] → [▶]: ON/OFF
[MODE] : EXIT
```

3 CONFIRM B.E.S.T. STATUS

The default setting is "ON". If this is the case, go to step **4**. If not, press **PUSH JOG▽** to place the pointer next to "B.E.S.T.", then press **PUSH JOG▷** to set to "ON".

4 CLOSE MODE SELECT SCREEN

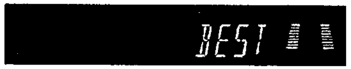
Press **MODE**.

5 START RECORDING

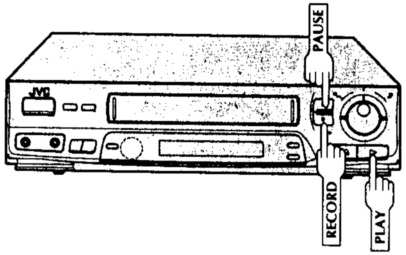
Press and hold **RECORD** and **PLAY** on the remote, or press **RECORD** on the recorder.

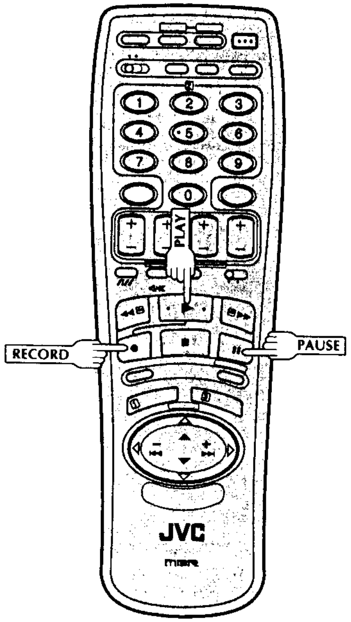
- The recorder spends approximately 7 seconds assessing the condition of the tape, then begins recording.
- When the "BEST" indicator begins blinking, that means adjustment is complete.

Display Panel Indication



As the tape check progresses, the "– –" marks on the display panel increase upward. Once the "BEST" indicator starts blinking, the check is complete.





NOTES:

- *The B.E.S.T. system works for both SP and LP modes only after a tape has been inserted and the Record mode is first initiated. It does not work during recording.*
- *In the case of timer recording, the B.E.S.T. system works before recording is initiated.*
- *Once the cassette is ejected, the B.E.S.T. data is cancelled. The next time the cassette is used for recording, B.E.S.T. is re-performed.*

ATTENTION:

*Since the B.E.S.T. system works before recording actually starts, there is a delay of approximately 7 seconds after **RECORD** and **PLAY** on the remote are pressed, or **RECORD** on the recorder is pressed. To make sure you record the desired scene or programme in its entirety, first perform the following steps:*

1) *Press and hold **PAUSE** and **RECORD** to engage the RECORD PAUSE mode.*
   - *The recorder then automatically checks the condition of the tape and, after approximately 7 seconds, re-enters RECORD PAUSE.*
2) *Press **PLAY** to start recording.*
   - *If you want to bypass the B.E.S.T. system and begin recording immediately, set "B.E.S.T." to "OFF" in step **3** on page 15.*

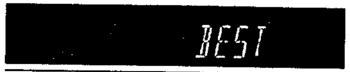
Playback

The recorder assesses the quality of the tape once you initiate playback.

When watching a tape recorded with "B.E.S.T." set to "ON", it is recommended that you leave B.E.S.T. on during playback as well.

1 START PLAYBACK

Press **PLAY**.

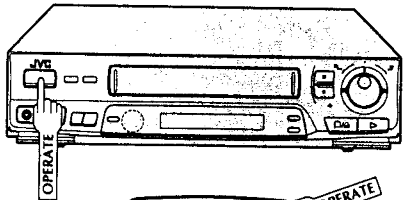


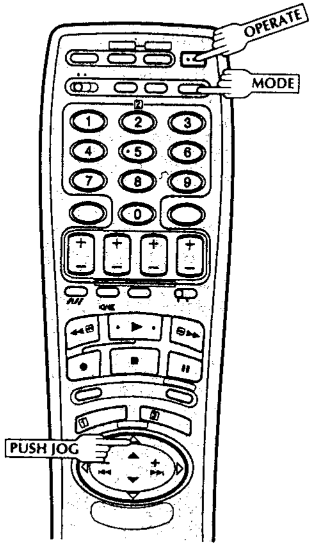
- The recorder adjusts the playback picture quality based on the quality of the tape in use.
- B.E.S.T. is active during Auto Tracking. "BEST" appears blinking on the recorder's display panel.

NOTES:

- *When watching a rental tape, or one recorded on another video recorder, set B.E.S.T. to your preference by performing steps **2** through **4** on page 15.*
- *"BEST" only appears at the beginning of automatic tracking. Even though it doesn't appear after that, the B.E.S.T. function is operative.*

On-Screen Displays





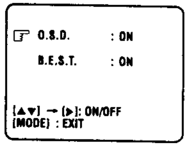
You can choose whether or not to have various operational indicators appear on screen, by setting this function ON or OFF. Messages appear in the language you selected during Auto Channel Set (☞ pg. 5).

1 TURN ON THE RECORDER

Press **OPERATE**.

2 ACCESS MODE SELECT SCREEN

Press **MODE**. The O.S.D./B.E.S.T. screen appears.



☞ O.S.D. : ON
B.E.S.T. : ON

[▲▼] → [▶]: ON/OFF
[MODE] : EXIT

3 SELECT MODE

The pointer should already be next to "O.S.D.". If not, press **PUSH JOG**△▽ to place it there.

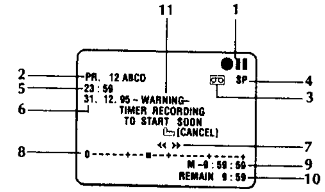
4 ENABLE/DISABLE ON-SCREEN DISPLAY

The default setting is "ON", so if you want on-screen displays, leave the setting as is and go to step 5. If you don't want the displays to appear, press **PUSH JOG** ▷ to set "O.S.D." to "OFF".

5 CLOSE MODE SELECT SCREEN

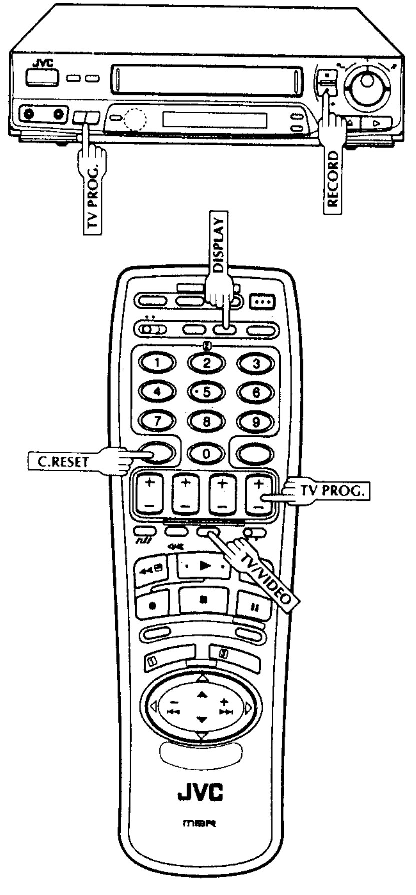
Press **MODE**.

The superimposed indication on the TV screen tells you what the recorder is doing.



1– Operation mode indicators
2– Channel position number and station name/Aux. indicator (AUX1, AUX2 or F-AUX[J438E only])
3– Cassette loaded mark
4– Tape speed SP/LP/EP (EP is for NTSC playback only) [J438Eonly]
5– Clock display
6– Current day/month/year
7– Tape direction
8– Tape position indicator (☞ pg. 12)
9– Counter display (including Counter Memory indicator)
10– Tape remaining time indicator
11– Timer warning display

Recording Features



Record One Programme While Watching Another

If your recorder is connected to the TV via AV connection, . . .
. . . press **TV/VIDEO**. The recorder's VIDEO indicator and the TV broadcast being recorded disappear.

1

SELECT CHANNEL TO WATCH

Once recording is in progress, all you need to do is to set the channel controls on the TV for the station you wish to view.

- The programme selected with the TV's channel controls appears on the TV screen while the one selected with the **TV PROG.** button is recorded on the tape.
- If a decoder is connected to the recorder (☞ pg. 4), you can select a scrambled channel as well with the TV channel controls.

Elapsed Recording Time Indication

You can check the exact time of a recording.

1

SET COUNTER DISPLAY

Press **DISPLAY** until a counter reading appears on the dispay panel.

2

RESET COUNTER

Press **C. RESET** before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs.

Instant Timer Recording (ITR)

This easy method lets you record for from 30 minutes to 6 hours (selectable in 30-min. increments), and shuts the recorder off after recording is finished.

1

START RECORDING

Press **RECORD** on the recorder.

2

ENGAGE ITR MODE

Press **RECORD** again. ITR blinks and 0:30 appears on the front display panel.

3

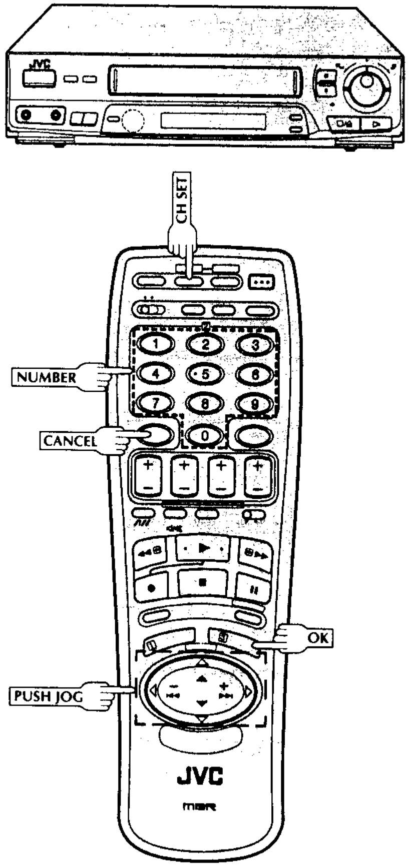
SET RECORDING DURATION

If you want to record for more than 30 minutes, press **RECORD** to extend the time. Each press extends recording time by 30 minutes.

NOTE:

*You can only perform ITR using the **RECORD** button on the recorder's front panel.*

Information On ShowView



With ShowView, timer programming is greatly simplified because each TV programme has a corresponding code number which your recorder is able to recognise.

NOTE:

"Guide Prog. Number" (GUIDE PROG) refers to the assigned TV station numbers, according to broadcast area, for ShowView timer recording.

IMPORTANT

Perform the following procedure after the channel setting steps on pages 5 and 29 – 30, and after the Clock Set procedure on page 7.
After setting the Guide Prog. Numbers, the station names and channel positions may be incorrect if you stored or skipped channels. In this case, re-perform Guide Prog. Number setting.

Guide Prog. Number Set

1

MAKE LIST OF STORED STATION NAMES AND CHANNEL POSITIONS

(Ex.)

Channel position	Station name
1	ARD
2	ZDF
3	WDR

2

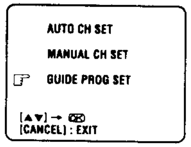
ACCESS CH. SET MODE MENU SCREEN

Press and hold **CH SET** for over 2 seconds. The Language screen appears. Press **OK** to access the Ch. Set Mode Menu screen.

3

SELECT MODE

Press **PUSH JOG**△▽ to place the pointer next to "GUIDE PROG SET", then press **OK**. The Guide Prog. Set screen appears.



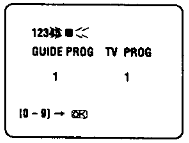
AUTO CH SET
MANUAL CH SET
☞ GUIDE PROG SET

[▲▼] → OK
[CANCEL] : EXIT

CONTINUED ON NEXT PAGE.

4 ENTER SHOWVIEW NUMBER

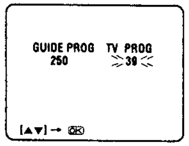
Press **OK**, and a cursor appears above "GUIDE PROG". Then, using the **NUMBER** keys, input the ShowView number (found in most TV listings) of a program scheduled to be broadcast on each station on the list from step **1**, starting at the top. If you enter the wrong number, press **CANCEL** and input the correct number.


12345■
GUIDE PROG TV PROG
1 1
[0 – 9] → OK

When entering a ShowView number for ARD

5 ENTER CHANNEL POSITION NUMBER

Press **OK** and the display under "TV PROG" begins blinking.


GUIDE PROG TV PROG
250 39
[▲▼] → OK

If the blinking number under "TV PROG" agrees with the channel position . . .
. . . press **OK**.

If the numbers do not agree . . .
. . . input the channel position using **PUSH JOG**△▽ or the **NUMBER** keys, then press **OK**.

- If you input the ShowView number of a program that has already aired, "ERROR" appears on screen for a few seconds. Input the correct ShowView number.
- Repeat steps **4** and **5** as necessary.

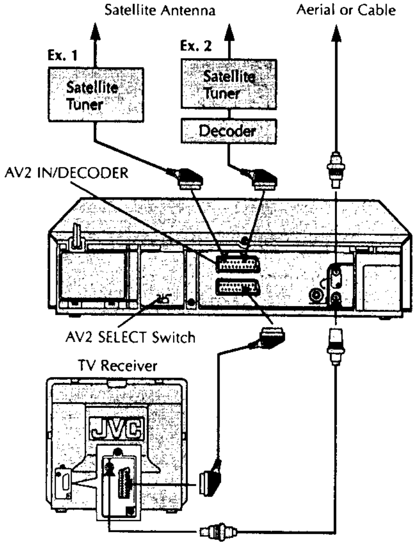
6 CLOSE MENU

Press **CH SET** and selection is complete.

If you already know the Guide Prog. number for a station . . .

1– After step **3**, press **PUSH JOG**▷.
  - The GUIDE PROG number begins blinking.
2– Enter the Guide Prog. number using the **NUMBER** keys or **PUSH JOG**△▽, then press **PUSH JOG**▷ .
  - The TV PROG number begins blinking.
3– Enter the channel position using the **NUMBER** keys or **PUSH JOG**△▽, then press **PUSH JOG**◁ .
  - Repeat **2** and **3** as necessary.
4– Press **CH SET**.

When Using A Satellite Tuner



Preparation

1– Connect the satellite tuner to the AV2 IN/DECODER connector on the rear of your recorder.
2– Set the **AV2 SELECT** switch to "AV2".

To Record Satellite Broadcasts . . .

1– Select the appropriate channel on the satellite tuner.
2– Press **NUMBER** key "0" to set your recorder's input mode to "AUX2".
3– Start recording (☞ pg. 14, steps **3** – **6**).

To Record Satellite Broadcasts Using ShowView Timer Recording . . .

1– Perform Guide Prog. Number setting.
  - In step **5** in the left column, press **NUMBER** key "0" to set "TV PROG" to "AUX2".
2– Perform ShowView Timer Recording (☞ pg. 21).

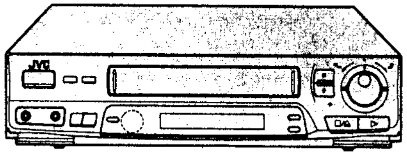
To Record Satellite Broadcasts Using Regular Timer Recording . . .

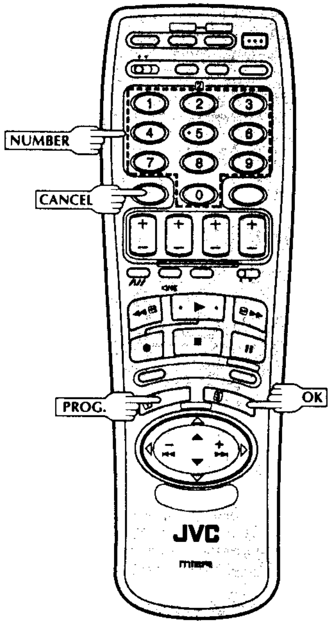
1– In step **6** on page 23, press **TV PROG. +/–** to set the channel position to "AUX2".

NOTES:

- *During timer programming, once you have selected the programme you wish to record from the satellite tuner, set the system's timer. If your satellite tuner does not have a timer, leave it switched on.*
- *If your recorder's front panel VIDEO and/or AUDIO connectors are being used, they take priority and "AUX2" cannot be selected. Make sure no cables are connected to the front panel connectors when performing this procedure.*

ShowView Timer Recording

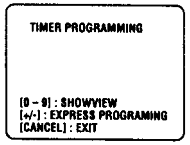




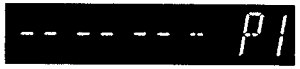
Before performing ShowView timer recording, be sure to read "Information On ShowView" (☞ pg. 19).

1 ACCESS TIMER PROGRAMMING SCREEN

Press **PROG.**

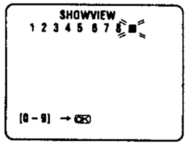

TIMER PROGRAMMING
[0 – 9] : SHOWVIEW
[+/-] : EXPRESS PROGRAMING
[CANCEL] : EXIT

The front display panel looks like this:



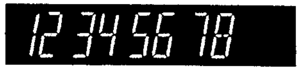
2 ENTER SHOWVIEW NUMBER

Press the **NUMBER** keys to enter the ShowView number of a programme you wish to record.


SHOWVIEW
1 2 3 4 5 6 7 8 ■
[0 – 9] → OK

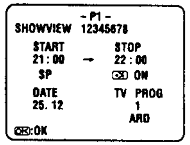
- If you make a mistake, press **CANCEL** and then input the correct number.

The ShowView number you enter appears on the front display panel:



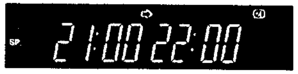
3 ACCESS SHOWVIEW PROGRAM SCREEN

Press **OK**, and the ShowView Program screen appears (if you're just starting out, "P1" appears).

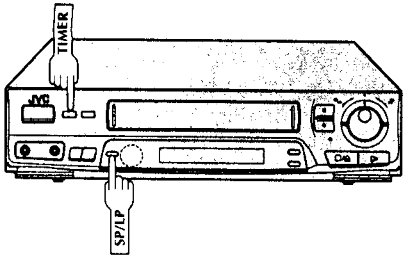

- P1 -
SHOWVIEW 12345678
START → STOP
21 : 00 → 22 : 00
SP ⊡ ON
DATE TV PROG
25. 12 1
ARD
OK:OK

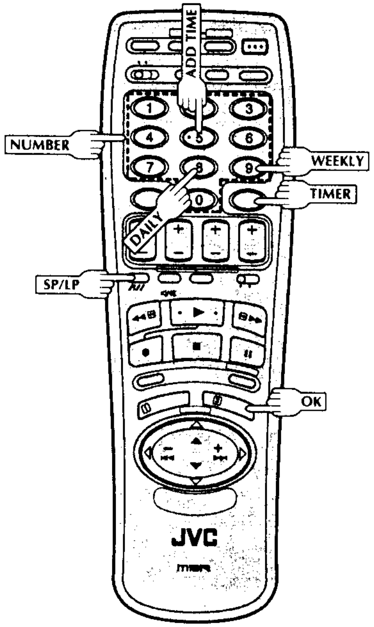
- If the number you entered is invalid, "ERROR" appears. Press **CANCEL** and input a valid ShowView number.

The front display panel looks like this:



- If you're not receiving PDC/VPS, press **NUMBER** key "7" to set ⊡ to "OFF" (☞ pg. 24).





4 SET TAPE SPEED (J438E ONLY)

Press **SP/LP** to set the tape speed.

5 RETURN TO NORMAL SCREEN

Press **OK**.

- Repeat steps **1–5** for each additional programme.

6 ENGAGE RECORDER'S TIMER MODE

Press **TIMER**.

NOTE:

*For safety, your recorder disables all other functions while in the Timer mode. If you want to use the recorder but its Timer mode is engaged, press **TIMER** and all other functions are operable.*
*To re-engage the timer, press **TIMER**.*

To Delay The Stop Time . . .
. . . press **ADD TIME** after pressing **OK** in step **3**. Each time you press, the Stop time is delayed by 5 minutes (meaning that 5 minutes of recording time is added). You can easily compensate for anticipated programme schedule delays this way.

To Timer-Record Weekly Or Daily Serials . . .
. . . after pressing **OK** in step **3**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday–Friday).

You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 24).

Regular Timer Programming

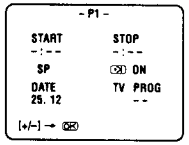
If you don't know the SowView number for the programme you wish to record, use the following procedure to set your recorder to timer-record the programme.
Remember, the clock must be set before you can programme the timer (☞ pg. 7).

1 ACCESS TIMER PROGRAMMING SCREEN

Press **PROG**.

2 ACCESS PROGRAMME SCREEN

Press **START +/–**. (If you're just starting out, "P1" appears.)



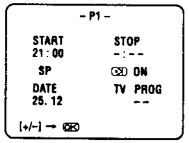
```
          - P1 -
START            STOP
-:--             -:--
 SP              ⊡ ON
DATE             TV PROG
25. 12              --
[+/–] → OK
```

The front display panel looks like this:

3 ENTER PROGRAMME START TIME

Press **START +/–** to enter the time you want recording to start.

- Press and hold **START +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



```
          - P1 -
START            STOP
21:00            -:--
 SP              ⊡ ON
DATE             TV PROG
25. 12              --
[+/–] → OK
```

The front display panel looks like this:

4 ENTER PROGRAMME STOP TIME

Press **STOP +/–** to enter the time you want recording to stop.

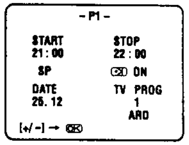
5 ENTER PROGRAMME DATE

Press **DATE +/–**. (The current date appears on screen. The date you enter appears in its place.)

6 ENTER CHANNEL POSITION

Press **TV PROG. +/–**.

- If you're not receiving PDC/VPS, press **NUMBER** key "7" to set ⊡ to "OFF" (☞ pg. 24).



```
          - P1 -
START            STOP
21:00            22:00
 SP              ⊡ ON
DATE             TV PROG
26. 12              1
                   ARD
[+/–] → OK
```

7 SET TAPE SPEED (J438E ONLY)

Press **SP/LP** to set the tape speed.

8 RETURN TO NORMAL SCREEN

After confirming all information is correct, press **OK** and the normal screen appears.

- Repeat steps **1–8** for each additional programme.

9 ENGAGE RECORDER'S TIMER MODE

Press **TIMER**.

To Timer-Record Weekly Or Daily Serials . . .
. . . anytime during steps **2** through **8**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday–Friday).

NOTES:

- *To timer-record from a satellite tuner connected to your recorder's AV2 IN/DECODER connector, press **TV PROG. +/–** in step **6** above to set the channel position to "AUX2".*
- *You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 24).*

Check And Cancel Programmes

1 ACCESS PROGRAMME SCREEN

Press **PROG CHECK.** Each time you press the next program's information appears.

- Press **OK** and watch the front display panel as the Start and Stop times, the Date and the Channel Position appear.
- If the recorder is turned on and the TV is set to its VIDEO mode, you can check program information on screen as well.

If All Information Is Correct . . .
. . . programming is completed.

If You Wish To Revise Data . . .
. . . with the recorder's power turned on, go to step **2**.

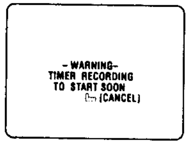
If You Wish To Cancel A Program . . .
. . . with the recorder's power turned on, press **CANCEL**. All information you input is deleted.

2 REVISE PROGRAMME INFORMATION

Input the appropriate data using the **START +/–**, **STOP +/–**, **DATE +/–** and **TV PROG. +/–** buttons on the remote control.

Timer Warning

If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on screen to tell you that the recording is to start in 5 minutes.



– WARNING–
TIMER RECORDING
TO START SOON
(CANCEL)

NOTES:

- *The warning only appears if you're not in the Timer mode at that time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen is recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press **CANCEL**.

Auto SP/LP Timer (J438E only)

If, when recording in SP mode, there is not enough tape to record the entire programme, the recorder automatically switches to LP mode to allow complete recording.

1 ENGAGE AUTO SP/LP TIMER

Press **AUTO SP/LP TIMER** on the recorder front panel. The button lights "green".

For Example . . .
Recording a program of 210 minutes in length onto a 180-minute tape

Approximately 150 minutes	Approximately 60 minutes
SP mode	LP mode

Total 210 minutes

Make sure you press **AUTO SP/LP TIMER** before performing timer programming.

NOTES:

- *The Auto SP/LP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly with any tapes longer than E-180 as well as some tapes of shorter lenghs.*
- *Even if, in step* ***1****, you press* ***AUTO SP/LP TIMER*** *and it lights "green", that doesn't mean that the recorder will automatically change from SP to LP mode during the course of the recording. Watch the tape later to confirm.*
- *If you have programmed the recorder to timer-record 2 or more programs, the second programme and those thereafter may not fit on the tape if you engage the Auto SP/LP Timer mode. In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *There may be some noise at the point on the tape where the recorder switches from SP to LP mode.*
- *If you perform timer recording with both PDC/VPS and the Auto SP/LP Timer activated, and the programme goes beyond its originally scheduled length, there may be times when the programme cannot be recorded in its entirety.*

PDC/VPS Recording

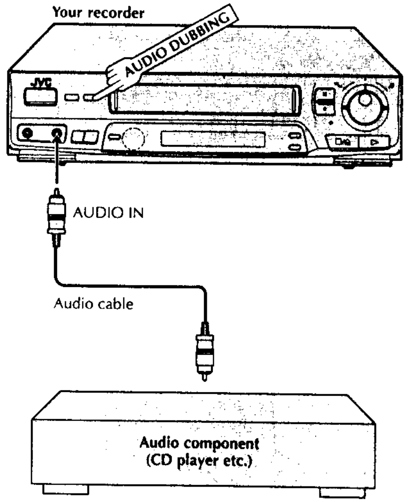
Now available from some TV stations, PDC (Programme Delivery Control) and VPS (Video Programme System) are service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

To Use PDC/VPS Service . . .
The default setting for PDC/VPS is "ON". To cancel PDC/VPS, press **NUMBER** key "7" so that "OFF" is displayed on screen during ShowView or regular timer programming.

NOTES:

- *When you manually enter programmes (regular timer programming), set the start time (PDC or VPS time) exactly as advertised in the TV listing. A different time than advertised will result in no recording.*
- *PDC/VPS recording is also possible when a satellite tuner or a cable system is connected to AV2 IN on your recorder.*
- *When PDC/VPS recording is performed, the Instant ReView programme readout number may not match the actual number of programmes that have been timer-recorded (☞ pg. 11).*

Audio Dubbing (J438E only)



Audio dubbing replaces the normal audio sound of a previously recorded tape with a new soundtrack.

1 CONNECT AUDIO SOURCE

Connect using the AUDIO IN connector on the recorder's front panel.

2 SET INPUT MODE

Press **NUMBER** key "0" to set the input mode. "F-AU" appears in the recorder's display panel instead of a channel position number.

3 START PLAYBACK

Press **PLAY**.

4 FIND START POINT FOR DUBBING

Watch the tape as it plays back, and when you reach the point where you want dubbing to start, press **PAUSE**.

5 ENGAGE AUDIO DUB MODE

Press **AUDIO DUBBING**.

6 START SOURCE PLAYBACK

Engage the audio source's Play mode.

7 START AUDIO RECORDING

Press **PLAY**, and audio dubbing begins.

- To stop dubbing temporarily, press **PAUSE**.

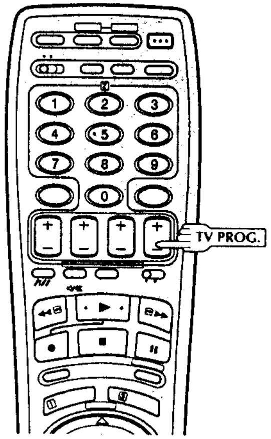
8 STOP AUDIO DUBBING

Press **STOP** to stop the recorder, and engage the audio source's Stop mode.

NOTES:

- *Audio dubbing stops automatically when the counter reaches "0:00:00", and the recorder enters the Play mode. Check the counter reading before beginning audio dubbing.*
- *Audio dubbing is also possible with input via the rear panel AV1 or AV2. With AV2, set the* ***AV2 SELECT*** *switch to "AV2".*
- *Connections made to the front panel AUDIO and VIDEO IN connectors are given priority over the rear panel AV1 and AV2 input connectors.*

Edit To Or From Another Video Recorder



You can use your video recorder as the source player or the recording deck.

1

MAKE CONNECTIONS

Connect the player's AUDIO/VIDEO OUT connector to the recorder's AUDIO/VIDEO IN connector.

When Using Your Video Recorder As The Source Player . . .
. . . connect its AV1 IN/OUT connector to the recording deck.

When Using Your Video Recorder As The Recording Deck . . .
. . . you can use the AV1 IN/OUT or AV2 IN connectors.

2

SET RECORDING DECK'S INPUT MODE

Set to AUX. With this video recorder, press **TV PROG.** to select depending on the connector being used — "AU 1" for the AV1 IN/OUT connector, or "AU 2" for the AV2 IN connector.

- When using the AV2 IN connector, make sure the **AV2 SELECT** switch is set to "AV2".

3

START SOURCE PLAYER

Engage its Play mode.

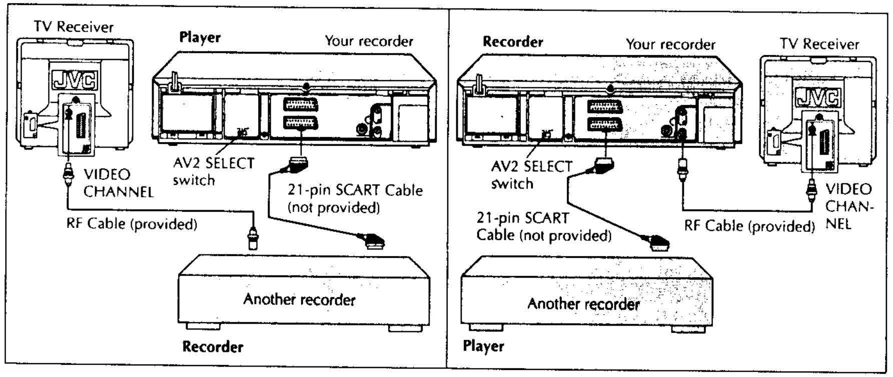
4

START RECORDING DECK

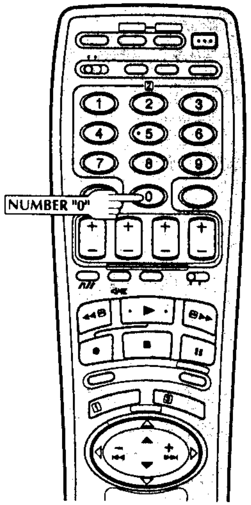
Engage its Record mode.

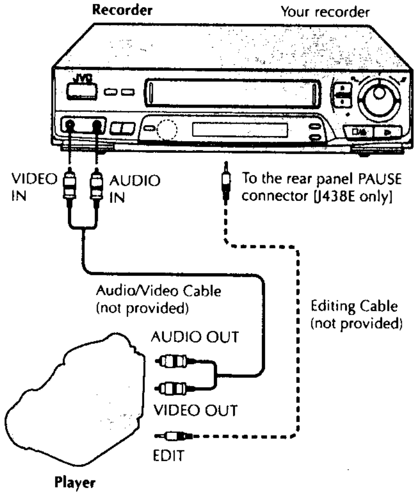
NOTE:

All necessary cables can be obtained from your dealer.


TV Receiver
Player
Your recorder
VIDEO CHANNEL
AV2 SELECT switch
21-pin SCART Cable (not provided)
RF Cable (provided)
Another recorder
Recorder
Recorder
Your recorder
TV Receiver
AV2 SELECT switch
21-pin SCART Cable (not provided)
RF Cable (provided)
VIDEO CHANNEL
Another recorder
Player

Edit From A Camcorder




Recorder
Your recorder
VIDEO IN
AUDIO IN
To the rear panel PAUSE connector [J438E only]
Audio/Video Cable (not provided)
Editing Cable (not provided)
AUDIO OUT
VIDEO OUT
EDIT
Player

You can use a camcorder as the source player and your video recorder as the recorder.

1

MAKE CONNECTIONS

To J438E Owners:
Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's front panel AUDIO/VIDEO input connectors.

- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling the recorder. Refer to the camcorder's instruction manual for operating procedure.

To J238E Owners:
Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's AV1 IN/OUT or AV2 IN connector.

2

SET RECORDER'S INPUT MODE

To J438E Owners:
Press **NUMBER** key "0". "F-AU" appears in place of a channel number.

To J238E Owners:
Press **NUMBER** key "0" and/or **TV PROG.** to select depending on the connector being used — "AU 1" for the AV1 IN/OUT connector, or "AU 2" for the AV2 IN connector.

- When using the AV2 IN connector, make sure the **AV2 SELECT** switch is set to "AV2".

3

START CAMCORDER

Engage its Play mode.

4

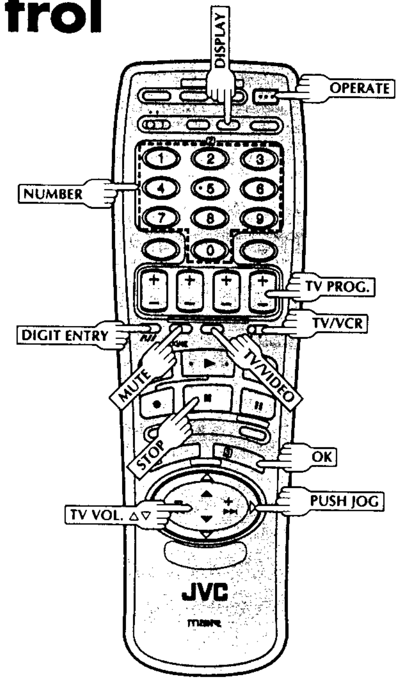
START RECORDER

Engage its Record mode.

NOTE:

Connections made to the front panel AUDIO/VIDEO input connectors automatically override those made to the rear panel AUDIO/VIDEO input connectors. [J438E only]

Multi-Brand Remote Control



CODE	TV BRAND NAME
01	JVC
02	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
03	FERGUSON
04	PHILIPS
05	BLAUPUNKT, GRUNDIG
06	SONY
07	PANASONIC
08	GRAETZ, ITT, LUXOR, SALORA, SELECO
09	MIVAR
10	HITACHI
11	TOSHIBA
12	MITSUBISHI
13	FINLUX
14	NOKIA

Your remote control can operate the basic functions of your TV set. In addition to JVC TVs, other manufacturer's TVs can also be controlled by setting the appropriate switch on the remote control.

Before you start . . .
- Turn on the TV using its remote control.
- Set the remote control's **TV/VCR** switch to TV.

NOTE:

If your TV is a JVC, you don't have to set the code in step 1. Go to step 2.

1

SET TV BRAND CODE

Refer to the chart below. While holding down **OPERATE**, enter your TV's brand code using the **NUMBER** keys, then press **STOP**.

- You don't have to repeat this step until you replace your remote control's batteries.

2

TRY OPERATING TV

Press **OPERATE** on the remote to turn the TV off. If it goes off, try other operations.

- The **OPERATE** button, **TV/VIDEO** button, **TV PROG. +/–** button, **TV VOL△▽** button and **MUTE** button on the remote can all be used to operate the TV.
- To return the remote to video recorder control, set its **TV/VCR** switch to VCR.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many other models, it may not work with your TV, or in some instances, may have limited function capability.

Control Your TV Using Additional Buttons

The **NUMBER** keys on the remote can also be used to select the TV's channel by setting the remote control to the TV mode.

1 Set the **TV/VCR** switch to TV.
2 Use the **NUMBER** keys, and the **DIGIT ENTRY** (////) button, the **PUSH JOG** button, the **DISPLAY** button or the **OK** button to select the TV's channel.

- With televisions under Code 01, 03, 04, 06, 07, 10 or 11, the **DIGIT ENTRY** button corresponds to the 1-digit/2-digit entry switching button (often labelled – /– –) of your TV's remote control.
- With televisions under Code 01, 08 or 09, the **PUSH JOG** ◁ button corresponds to the 10 + button, and the **PUSH JOG** ▷ button corresponds to the 20 + button of your TV's remote control.
- With televisions using Code 09, the **DISPLAY** button corresponds to the 30 + button.
- With televisions using Code 06, the **OK** button corresponds to the ENTER button of your TV's remote control.

NOTE:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Storing Channels Manually

Store channels that were not stored during Auto Channel Set.

1

ACCESS CH. SET MODE MENU

Press and hold **CH SET** for more than 2 seconds. The Language screen appears. Press **OK**. The Ch. Set Mode menu appears.

2

SELECT MODE

Press **PUSH JOG△▽** to select "MANUAL CH SET", then press **OK**. The Confirmation screen appears.

3

SELECT POSITION

Press **PUSH JOG△▽◁▷** until an open position in which you want to store a channel begins blinking, then press **OK**. The Manual Ch. Set screen appears.

4

INPUT CHANNEL

The number "02" appears blinking beneath "CH". Press the **NUMBER** keys to input the channel number you want to store.

- Although "CH" is set to "02", when the Manual Ch. Set screen appears, to store channel 02, you must select "02" using the **NUMBER** keys.
- For fine tuning adjustment, press **PUSH JOG ▷** until the item beneath "CH" begins blinking, then press **PUSH JOG△▽**. While tuning, "F+" or "F–" appears.
- When storing a channel that sends scrambled broadcasts, press **PUSH JOG▷** until "DECODER" blinks, then press **PUSH JOG△▽** to set "DECODER" to "ON" ("OFF" is the default setting).

5

ENTER NEW CHANNEL INFORMATION

Press **OK** or **STORE**, and the Confirmation screen appears.

- Repeat steps **3** through **5** as necessary.

6

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

- To input the station name, see page 30.
- To change positions, see "Change Station Channel Position" (at right).

When Receiving A Scrambled Broadcast

Make sure that the **AV2 SELECT** switch is set to "DECODER" (☞ pg. 4).

1– Perform steps **1** and **2** above.
2– Press **PUSH JOG△▽ ◁▷** to select the position of the channel broadcasting the scrambled programmes, then press **OK** three times.
3– Press **PUSH JOG ▷**until "DECODER" begins blinking, and set it to "ON" by pressing **PUSH JOG△▽**.
4– Press **OK** to access the Confirmation screen.
- Repeat steps **2 – 4** for each additional channel.

5– Press **CH SET**.

Perform steps **1** and **2** of the previous procedure to access the Confirmation screen before continuing.

Delete A Channel

1

SELECT ITEM

Press **PUSH JOG△▽◁▷** until the item you want to delete begins blinking.

2

DELETE CHANNEL

Press **CANCEL**.

- The item directly beneath the cancelled one moves up one line.
- Repeat steps **1** and **2** as necessary.

3

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

Change Station Channel Position

1

SELECT ITEM

Press **PUSH JOG△▽◁▷** until the item you want to move begins blinking. Then press **OK** and the station name (ID) and its channel (CH) number begin blinking.

2

SELECT NEW POSITION

Press **PUSH JOG△▽◁▷** to move the station to the new channel position, then press **OK**.

Example: If you moved the station in position 3 to position 7, the stations originally in positions 4–7 each move up one space.

- Repeat steps **1** and **2** as necessary.

3

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

Perform steps **1** and **2** of "Storing Channels Manually" on page 29 to access the Confirmation screen before continuing.

Set Stations (A)

1

SELECT ITEM

Press **PUSH JOG**△▽◁▷ until the item you want begins blinking. Then press **OK** twice and the station's name (ID) begins blinking.

2

SELECT NEW STATION

Press **PUSH JOG**△▽ until the new station's name (ID) you want to store begins blinking.
Registered station names (☞ pg. 31) appear as you press **PUSH JOG**△▽.

3

SWITCH STATIONS

Press **OK**.

- Repeat steps **1** through **3** as necessary.

4

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

Set Stations (B)

NOTE:

*First perform step **1** of the above procedure.*

2

SELECT STATION NAME CHARACTER

Press **PUSH JOG** ▷ and the first letter of the station name begins blinking.

3

ENTER NEW CHARACTER

Press **PUSH JOG**△▽ to cycle through the characters (A–Z, 0–9, –, ✱, +, — (space)) and stop when the desired one is indicated, then press **PUSH JOG** ▷ to enter. Enter the remaining characters the same way (maximum of 4).
After entering all characters, press **OK**.

- Repeat steps **1** through **3** as necessary.
- If you make a mistake, press **PUSH JOG** ◁ until the incorrect character begins blinking. Then enter the correct character by pressing **PUSH JOG**△▽ .

4

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

Fine-Tuning Channels Already Stored

1

SELECT CHANNEL TO FINE-TUNE

Press **PUSH JOG**△▽◁▷ until the channel you want to tune begins blinking.

2

ACCESS MANUAL CH. SET SCREEN

Press **OK** three times. The Manual Ch. Set screen appears.

3

PERFORM TUNING

Press **PUSH JOG**△▽ until the picture is its clearest. Then press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **3** as necessary.

4

CLOSE CONFIRMATION SCREEN

Press **CH SET**.

TV STATION AND ID LIST

ID*	STATION NAME
1000	TV1000
3SAT	3SAT
ADLT	ADULT
ANT3	ANTENA3
ARD	ARD
ARTE	ARTE
BBC	BBC GROUP
BBC1	BBC1
BBC2	BBC2
BR3	BAYERN3
C+	CANAL PLUS
C1	PORTUGUSES
CAN5	CANALE5
CH4	CHANNEL4
CH5	CHANNEL5
CHLD	CHILD
CINE	CINEMA
CLUB	TELECLUB
CMT	CMT
CNN	CNN
CSUR	ANDALUCIA
DISC	DISCOVERY
DR	DR TV
DRS	DRS
DSF	DSF
ETB1	ETB1
ETB2	ETB2
EURO	EURONEWS
EUSP	EUROSPORTS
FEMM	FEMMAN
FILM	FILM
FNET	FILMNET
FR2	France2
FR3	France3
GALA	GALAVISION
HR3	HESSEN3
INFO	INFO-KANAL
ITA1	ITALIA1
ITA7	ITALIA7
ITV	ITV
JSTV	JSTV
KA2	KA2
KAB1	KABEL1
KAN2	KANAL2
LOCA	LOCAL
M6	M6
MBC	MBR
MCM	MCM
MDR	MDR
MOVE	MOVIE
MTV	MTV
MTV3	MTV3
N3	NORD3
N-TV	N-TV
NBC	NBC SUPER
NDR	NDR
NED1	NED1
NED2	NED2
NED3	NED3
NEWS	
NRK	NRK
ODE	ODEON
ORF1	ORF1
ORF2	ORF2
ORF3	ORF3
OWL3	OWL3
PREM	PREMIERE
PRO7	PRO7
RAI1	RAI1
RAI2	RAI2
RAI3	RAI3
RET4	RETE4
21	TELE21
RTBF	RTBF1 or 2
RTL	RTL
RTL2	RTL2
RTL4	RTL4
RTP	RTP
S4	SCHWEIZ4
SAT1	SAT1
SBS	SBS
SHOW	SHOW
SIC	SOCIEDADE
SKY	SKY CHANNEL
SKYN	SKY NEWS
SPRT	SPORT
SRTL	SUPER RTL
STAR	STAR-TV
SVT1	SVT1
SVT2	SVT2
SW3	SUEDWEST3
TCC	TCC
TELE	TELE
TEL5	TELE5
TF1	TF1
TM3	TM3
TMC	TELEMONTECARLO
TNT	TNT INT
TRT	TRT INT
TSI	TSI
TSR	TSR
TV1	BRTN TV1
TV2	BRTN TV2
TV3	TV3
TVE1	TVE1
TVE2	TVE2
TVG	TV GALICIA
TVI	TV INDEPENDENT
TVN	TV NORGE
VCR	VIDEO
VERO	VERONICA
VH-1	VH-1
VIVA	VIVA
VIV2	VIVA2
VMTV	VIDEO MUSIC
VOX	VOX
VT4	VT4
VTM	VTM
WDR1	West1
WDR3	West3
YLE1	YLE1
YLE2	YLE2
ZDF	ZDF
ZTV	ZTV

* The ID designator appears on your recorder's front display panel and in the on-screen listing.

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your video recorder off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. No power is applied to the recorder.	● The mains power cord is disconnected.	Connect the mains power cord.
2. The clock is functioning properly, but the recorder cannot be powered.	● "◷" is displayed on the display panel.	Press the **TIMER** button to turn the "◷" indicator off.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape does not run during recording.	● "❚❚" is displayed on the display panel.	Press **PLAY** to turn the "❚❚" indicator off.
2. The tape stops during rewind or fast-forward.	● "M" is displayed on the display panel.	Press **C.MEMORY** to deactivate the Counter Memory function and turn the "M" indicator off.
3. The tape will not rewind or fast-forward.	● The tape is already fully rewound or fast-forwarded.	Check the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The playback picture does not appear while the tape is running.	● If you're using the RF OUT connection, the TV receiver's channel selector is set to the wrong video channel. ● If you're using the AV connection, the TV receiver is not set to the AV mode.	If you are using the RF OUT connection, set the TV receiver to the RF converter channel (UHF 36). (☞ pg. 3) If you are using the AV connection, set the TV to its AV mode.
2. Noise appears during visual search.	● This is normal.	
3. Noise appears during normal playback.	● The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 11)
4. Noise appears during slow-motion playback.	● The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 11)
5. Noise appears during still playback.		Press **PAUSE** a few times to remove the noise bars from the screen.
6. The playback picture is blurred or interrupted while TV broadcasts are clear.	● The video heads may be dirty.	Consult your JVC dealer.

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	● There is no cassette loaded, or the cassette loaded has had its Record Safety tab removed.	Insert a cassette, or using adhesive tape, reseal the slot where the tab was removed.
2. TV broadcasts cannot be recorded.	● "AU" has been selected as the input mode.	Set to the desired channel.
3. Tape-to-tape editing is not possible.	● The source (another video recorder, camcorder) has not been properly connected. ● All necessary power switches have not been turned on. ● The input mode is not correct.	Confirm that the source is properly connected. Confirm that all units' power switches are turned on. Set the input mode to "AU".
4. Camcorder recording is not possible.	● The camcorder has not been properly connected. ● The input mode is not correct.	Confirm that the camcorder is properly connected. Set the input mode to "AU".

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	● The clock and/or the timer have been set incorrectly. ● The timer is not engaged.	Re-perform the clock and/or timer settings. Press **TIMER** and confirm that "◷" is displayed on the display panel.
2. On-screen timer programming is not possible.	● Timer recording is in progress.	Timer programming can't be performed while a timer recording is in progress. Wait until it finishes.
3. "◷" and "▣" on the display panel won't stop blinking.	● The timer is engaged but there's no cassette loaded.	Load a cassette with the Record Safety tab intact, or cover the hole using adhesive tape.
4. The cassette is automatically ejected, and "◷" and "▣" on the display panel won't stop blinking.	● The loaded cassette has had its Record Safety tab removed.	Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the Record Safety tab intact.
5. "◷" blinks for 10 seconds and the Timer mode is disengaged.	● **TIMER** has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly.	Check the programmed data and re-program as necessary, then press **TIMER** again.
6. The cassette is automatically ejected, the power shuts off and "◷" and "▣" won't stop blinking.	● The end of the tape was reached during timer recording.	The programme may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire programme.
7. ShowView does not timer-record properly.	● The recorder's channel positions have been set incorrectly.	Refer to "Guide Prog. Number Set" and re-perform the procedure (☞ pg. 19).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Whistling or howling is heard from the TV during camcorder recording.	● The camcorder's microphone is too close to the TV. ● The TV's volume is too high.	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
2. When scanning channels, some of them are skipped over.	● Those channels have been designated to be skipped.	If you need the skipped channels, restore them (☞ pg. 29).
3. The channel cannot be changed.	● Recording is in progress.	Press **PAUSE** to pause the recording, change channels, then press **PLAY** to resume recording.
4. The remote control won't operate the TV.	● The **TV/VCR** switch is in the wrong position.	Set the switch to TV.

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

· ·

Q. Can the video recorder indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

· ·

Q. During search, slow, still and frame-by-frame playback, I can't hear any audio. What's the problem?
A. This is normal.

· ·

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

· ·

Q. Noise bars appear during multi-speed search. What's the problem?
A. This is normal.

· ·

Q. Other than preventing further recording, what effect does removing the Record Safety tab have?
A. It disables marking of index codes.

· ·

Q. Sometimes, during Index Search, the video recorder can't find the programme I want to see. Why not?
A. There may be index codes too close together.

· ·

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

· ·

Q. Can the video recorder indefinitely remain in the Record-Pause mode?
A. No. The video recorder goes to its Stop mode automatically after 5 minutes to protect the heads.

· ·

Q. What happens if the tape runs out during recording?
A. The video recorder automatically rewinds it to the beginning.

· ·

TIMER RECORDING

Q. " ○ " and "◷" remain lit on the display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

· ·

Q. Can I program the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the program or tape you're viewing can be heard.

· ·

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the recorder off and unplug the mains power cord. Then plug it in again and turn the recorder on. Take out the cassette. After checking the cassette, operate the unit as usual.

GENERAL

Power requirement	: AC 220 – 240 V∿, 50/60 Hz
Power consumption	: 20 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 340 mm
Weight	: 4.3 kg
Format	: VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP) [J438E only]	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: DA4 (Double Azimuth) head helical scan system (HR-J438E) Rotary two-head helical scan system (HR-J238E)
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector x 2 (IN/OUT x 1, IN/DECODER x 1) RCA connector x 1 (IN x 1) [J438E only]

TUNER/TIMER

TV channel storage capacity	: 99 positions (+AUX position "AU")
Tuning system	: Frequency synthesized tuner
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470MHz UHF 470 – 862MHz
Aerial output	: UHF channel 36 (Adjustable 32 – 40)
Memory backup time	: Approx. 60 min.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

List Of Terms

This guide serves as a quick way to loacte frequently used terms and on-screen display names. The first page on which the term appears is listed. Most terms appear more than once in the instruction manual.

A

A/B Code Switch ☞ pg. 13
A-Code Signals ☞ pg. 13
Aerial ☞ pg. 3
Audio Dubbing ☞ pg. 25
Auto Channel Set ☞ pg. 5
Auto Clock Set ☞ pg. 7
Auto SP/LP Timer ☞ pg. 24
AUX ☞ pg. 20
AV ☞ pg. 3
AV Connection ☞ pg. 3

B

B-Code Signals ☞ pg. 13
B.E.S.T. (Biconditional Equalised Signal Tracking) ☞ pg. 15

C

Cancel ☞ pg. 20
Cassette Adapter ☞ pg. 9
Channel Set Mode Menu ☞ pg. 5
Clock ☞ pg. 7
Clock Set ☞ pg. 7
Contents ☞ pg. 1
Counter Memory ☞ pg. 13
Counter Reset ☞ pg. 13
Country ☞ pg. 5

D

Daily ☞ pg. 22
Delete A Channel ☞ pg. 29
Display Panel ☞ pg. 38

E

Editing ☞ pg. 25

F

Fine Tuning ☞ pg. 30
Frame-By-Frame Playback ☞ pg. 10
Front View ☞ pg. 37

G

Guide Prog. Number ☞ pg. 19

H

Head Cleaning ☞ pg. 2
High-Seed Search ☞ pg. 10

I

Index Code ☞ pg. 12
Index Search ☞ pg. 12
Instant ReView ☞ pg. 11
Instant Timer Recording (ITR) ☞ pg. 18

J

Just Clock ☞ pg. 7
Jog Dial ☞ pg. 10

L

Language ☞ pg. 5
Load A Cassette ☞ pg. 9

M

Manual Channel Set ☞ pg. 29
Manual Clock Set ☞ pg. 8
Manual Tracking ☞ pg. 11
Moisture Condensation ☞ pg. 2
Multi-Brand Remote (MBR) Control Setting ☞ pg. 28

N

Next-Function Memory ☞ pg. 12
NTSC Playback ☞ pg. 11

O

On-Screen (O.S.D.) ☞ pg. 17

P

Programme Delivery Control (PDC) ☞ pg. 24
Playback ☞ pg. 9
Programme Screen ☞ pg. 23

R

Rear View ☞ pg. 37
Record Safety Tab ☞ pg. 14
Recording ☞ pg. 14
Repeat Playback ☞ pg. 11
RF Connection ☞ pg. 3

S

Scart Connector ☞ pg. 3
Scene Finder ☞ pg. 12
ShowView ☞ pg. 19
Shuttle Ring ☞ pg. 10
Slow Motion ☞ pg. 10
Specifications ☞ pg. 35
Still Picture ☞ pg. 10

T

Tape Position Indicator ☞ pg. 12
Tape Speed ☞ pg. 14
Timer Programming ☞ pg. 23
Timer Recording ☞ pg. 19
Timer Warning ☞ pg. 24
Tracking ☞ pg. 11
Tuner ☞ pg. 5
TV Brand ☞ pg. 28

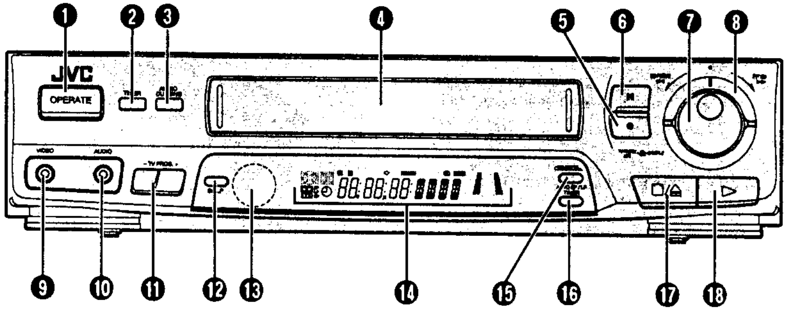
V

Variable-Speed Search ☞ pg. 10
Video Programme System (VPS) ☞ pg. 24

W

Weekly ☞ pg. 22

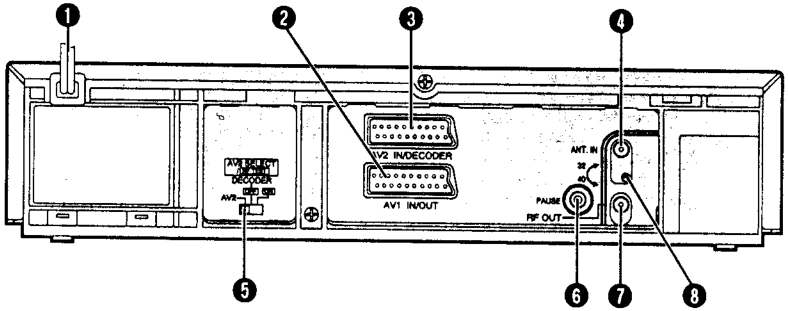
FRONT VIEW



*Remove the cap to use the front panel connectors.

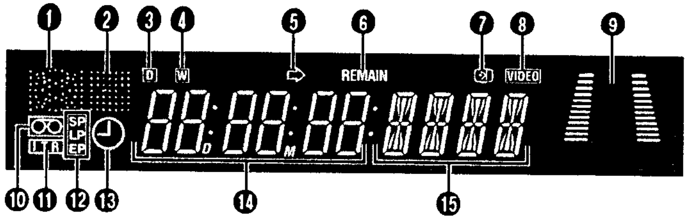
❶ OPERATE Button (☞ pg. 5)
❷ TIMER Button (☞ pg. 22)
❸ AUDIO DUBBING Button [J438E] (☞ pg. 25)
COUNTER RESET Button [J238E] (☞ pg. 13)
❹ Cassette Loading Slot
❺ RECORD Button (☞ pg. 14)
❻ PAUSE Button (☞ pg. 10)
❼ TV PROG. Dial (☞ pg. 14)
JOG Dial [J438E only] (☞ pg. 10)
❽ SHUTTLE Ring (☞ pg. 10)
❾ VIDEO Input Connector [J438E only] (☞ pg. 27)
❿ AUDIO Input Connector [J438E only](☞ pg. 25)
⓫ TV PROG. +/– Buttons (☞ pg. 5)
⓬ SP/LP [Tape Speed] Button [J438E only] (☞ pg. 14)
⓭ Infrared Beam Receiving Window
⓮ Display Panel (☞ pg. 38)
⓯ REVIEW Button (☞ pg. 11)
⓰ AUTO SP/LP TIMER Button [J438E only] (☞ pg. 24)
⓱ STOP/EJECT Button (☞ pg. 9)
⓲ PLAY Button (☞ pg. 9)

REAR VIEW



❶ Mains Power Cord (☞ pg. 3)
❷ AV1 IN/OUT Connector (☞ pg. 3)
❸ AV2 IN/DECODER Connector (☞ pg. 4)
❹ ANT. IN Connector (☞ pg. 3)
❺ AV2 SELECT/RF TEST Switch (☞ pg. 4)
❻ Remote PAUSE Connector [J438E only] (☞ pg. 27)
❼ RF OUT Connector (☞ pg. 3)
❽ RF Output Channel Adjustment Screw (☞ pg. 4)

DISPLAY PANEL



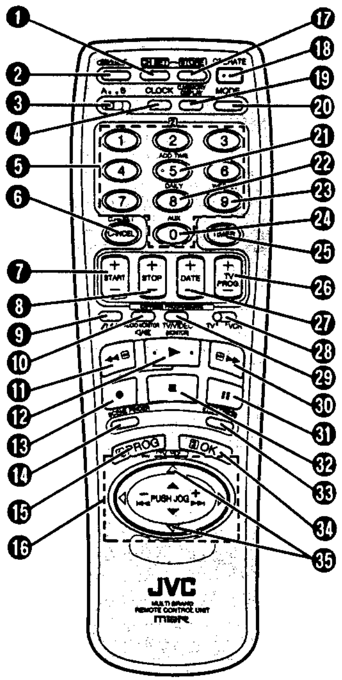
① and ② Symbolic Mode Indicators

PLAY:	▷	STILL: FORWARD SLOW:	▷ ▯▯
FF:	▷▷	STILL: REVERSE SLOW:	◁ ▯▯
REW:	◁◁	RECORD:	○
FF VARIABLE SHUTTLE SEARCH:	▷ ▷▷ *	RECORD PAUSE:	○ ▯▯
REW VARIABLE SHUTTLE SEARCH:	◁ ◁◁ *	AUDIO DUBBING: **	◎
REVERSE PLAY:	◁	AUDIO DUBBING PAUSE: **	◎ ▯▯

* The indicator will blink during turbo search.
** J438E only

③ "DAILY" Program Mark (☞ pg. 22)
④ "WEEKLY" Program Mark (☞ pg. 22)
⑤ Start Time/Stop Time Indicator (☞ pg. 21)
⑥ Tape Remaining Time Indicator (☞ pg. 13)
⑦ PDC/VPS Indicator (☞ pg. 24)
⑧ VIDEO Indicator (☞ pg. 5)
⑨ B.E.S.T. Picture System Display (☞ pg. 15)
⑩ "Cassette Loaded" Mark
⑪ Instant Timer Recording (☞ pg. 18)
⑫ Tape Speed Indicators [J438E only](☞ pg. 14)
⑬ "Timer" Indicator (☞ pg. 22)
⑭ Clock/Counter/Tape Remaining Time Display (☞ pg. 7)
⑮ Channel/Mode Display (☞ pg. 5)

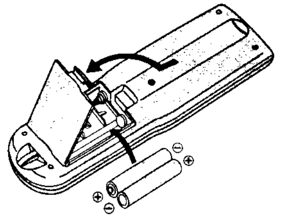
REMOTE CONTROL



① CH SET Button (☞ pg. 5)
② REVIEW Button (☞ pg. 11)
③ A/B CODE Switch (☞ pg. 13)
④ CLOCK Button (☞ pg. 7)
⑤ NUMBER Keys (☞ pg. 14)
⑥ CANCEL Button (☞ pg. 20)
C.RESET Button (☞ pg. 13)
⑦ START +/– Button ☞ pg. 23)
⑧ STOP +/– Button (☞ pg. 23)
⑨ SP/LP Button (☞ pg. 11)
DIGIT ENTRY Button (☞ pg. 28)
⑩ TV MUTE Button (☞ pg. 28)
⑪ Rewind [REW] Button (☞ pg. 9)
⑫ PLAY Button (☞ pg. 9)
⑬ RECORD Button (☞ pg. 14)
⑭ SCENE FINDER Button (☞ pg. 12)
⑮ PROG Button (☞ pg. 21)
⑯ PUSH JOG △▽◁▷ Button (☞ pg. 5)
PUSH JOG ◁▷ Button (☞ pg. 10)
⑰ STORE Button (☞ pg. 29)
C.MEMORY Button (☞ pg. 13)
⑱ OPERATE Button (☞ pg. 5)
⑲ DISPLAY Button (☞ pg. 13)
⑳ MODE Button (☞ pg. 15)
㉑ ADD TIME Button (☞ pg. 22)
㉒ DAILY Button (☞ pg. 22)
㉓ WEEKLY Button (☞ pg. 22)
㉔ AUX Button (☞ pg. 25)
㉕ TIMER Button (☞ pg. 22)
㉖ TV PROG. +/– Button (☞ pg. 5)
㉗ DATE +/– Button (☞ pg. 23)
㉘ TV/VCR Switch (☞ pg. 28)
㉙ TV/VIDEO Button (☞ pg. 5)
㉚ Fast Forward [FF] Button (☞ pg. 9)
㉛ PAUSE Button (☞ pg. 10)
㉜ STOP Button (☞ pg. 9)
㉝ PROG CHECK Button (☞ pg. 24)
㉞ OK Button (☞ pg. 5)
㉟ TV VOL △▽ Button (☞ pg. 28)

Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.



How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands (☞ pg. 28).

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

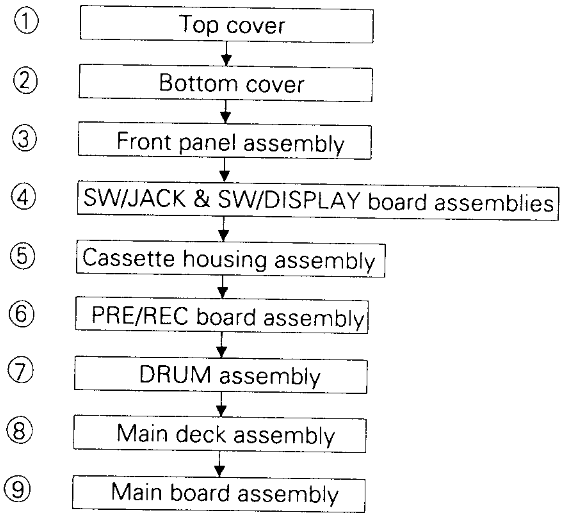
NOTE:

If for some reason the remote control doesn't work properly, remove its batteries, wait a short time and then try again.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists shows the disassembly steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend,route and dress the flat cables as they were originally.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1)	
②	BOTTOM COVER	D2	(S2), 7(L1)	
③	FRONT PANEL ASSEMBLY	D3	7(L2),*JOG/SHUTTLE	<NOTE 1>
④	SW/JACK & SW/DISPLAY BOARD ASSEMBLIES	D4	12(L3),*CN1,	<NOTE 2>
⑤	CASSETTE HOUSING ASSEMBLY	D5	4(S3) EARTH PLATE	<NOTE 3>
⑥	PRE/REC BOARD ASSEMBLY	D6	2(S4),*CN1 *CN201,*CN202 SHIELD CASE	

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig.No. showing procedure or part location
(4) Indentification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, * = Unhook,unlock, release,unplug or unsolder.
(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	5(S1)	
②	BOTTOM COVER	D2	(S2), 7(L1)	
③	FRONT PANEL ASSEMBLY	D3	7(L2),*JOG/SHUTTLE	<NOTE1>
④	SW/JACK & SW/DISPLAY BOARD ASSEMBLIES	D4	12(L3),*CN1201	<NOTE2>
⑤	CASSETTE HOUSING ASSEMBLY	D5	2(S3) ,2(S4)	<NOTE3>
⑥	PRE/REC BOARD ASSEMBLY	D6	2(S5),*CN101 *CN1, SHIELD CASE	<NOTE4>
⑦	DRUM ASSEMBLY	D7	3(S6),WR1,	<NOTE5>
⑧	MAIN DECK ASSEMBLY	D8	2(S7),WR2 WR3,2(L4),*CN703	<NOTE6>
⑨	MAIN BOARD ASSEMBLY	D9	2(S8)	

<NOTE1>
When reattaching the front panel assembly, make sure that the door opener (a) of the cassette housing assembly is lowered in position prior to the reinstallation.

<NOTE2>
When plugging the connector in, check that theflat wire is inserted properly and fully.

<NOTE3>
When reattaching the cassette housing assembly,pay careful attention to the switch lever not to make it touch the REC switch knob of the REC SAFETY board assembly from the upside.
(If the REC switch knob of the REC SAFETY board assembly is damaged, cassette loading is impossible.)

<NOTE4>
When removing the PRE/REC board assembly, unhook the two spacers connecting it with the Main board assembly with pliers from the top side then remove the PRE/REC board assembly.

<NOTE5>
When plugging the connector in, check that the flat wire is inserted properly and fully.

<NOTE6>
- When removing the Main deck assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Main deck assembly.
- When reattaching the Main deck assembly tothe Main board assembly, make sure to set the spacers in to the retaining slots respectively.

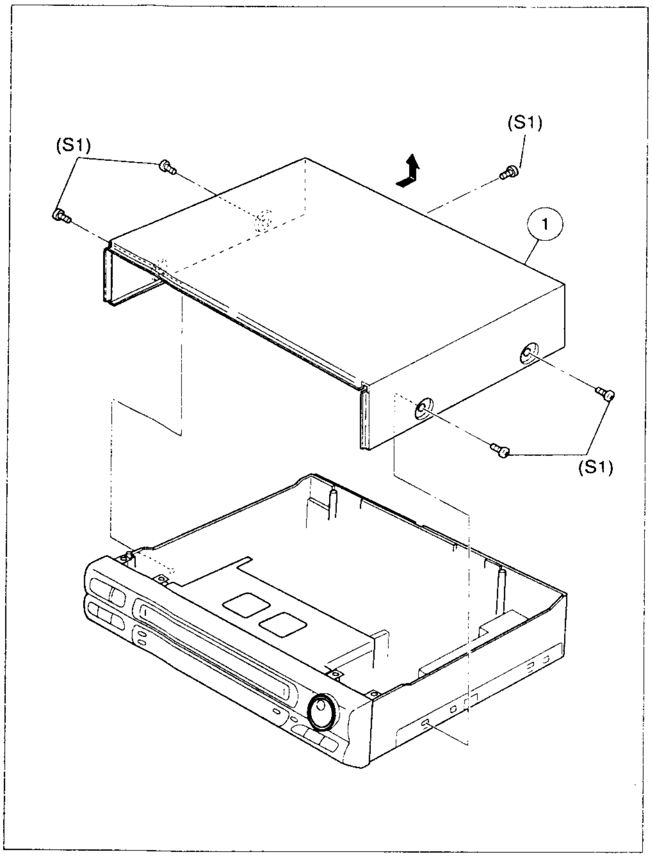


Fig. D1

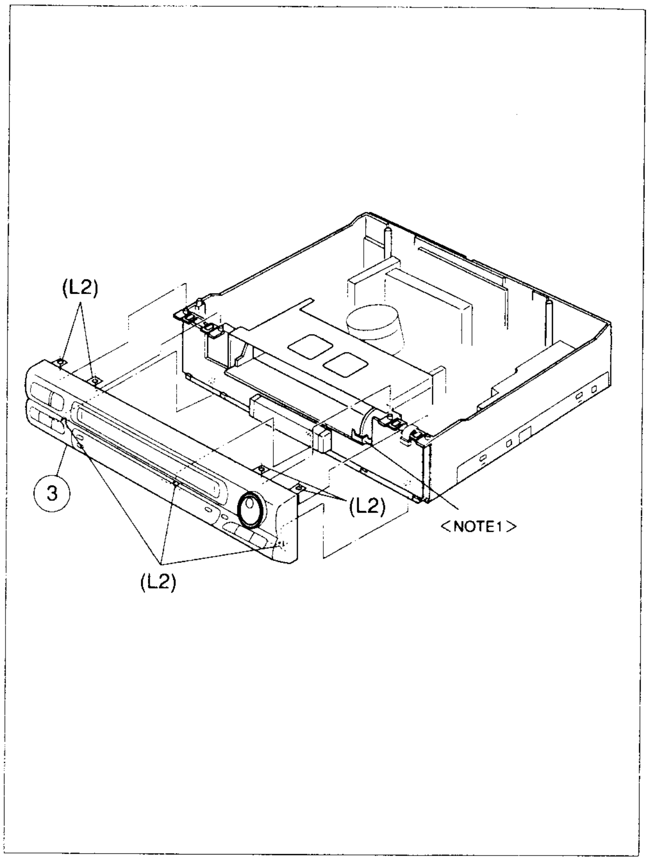


Fig. D3

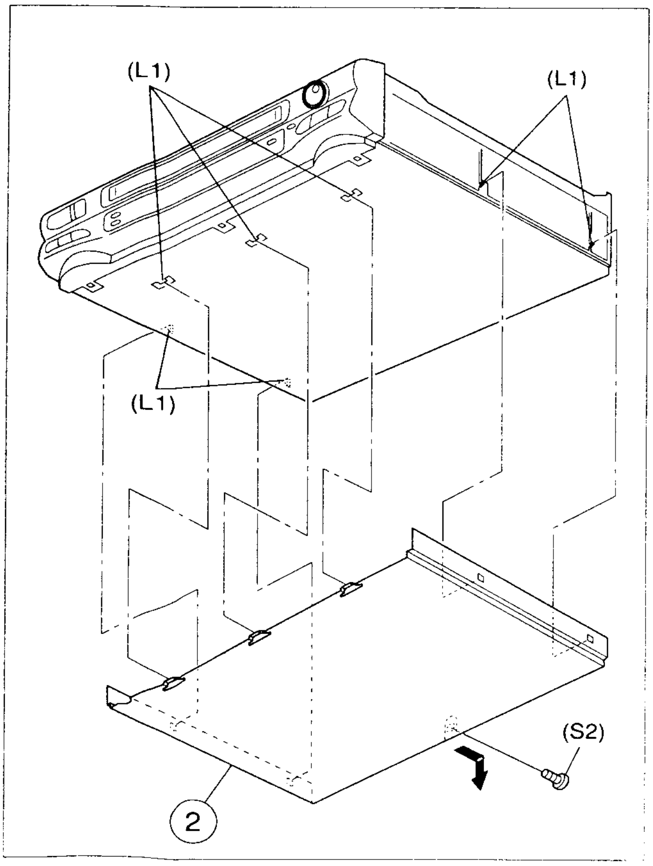


Fig. D2

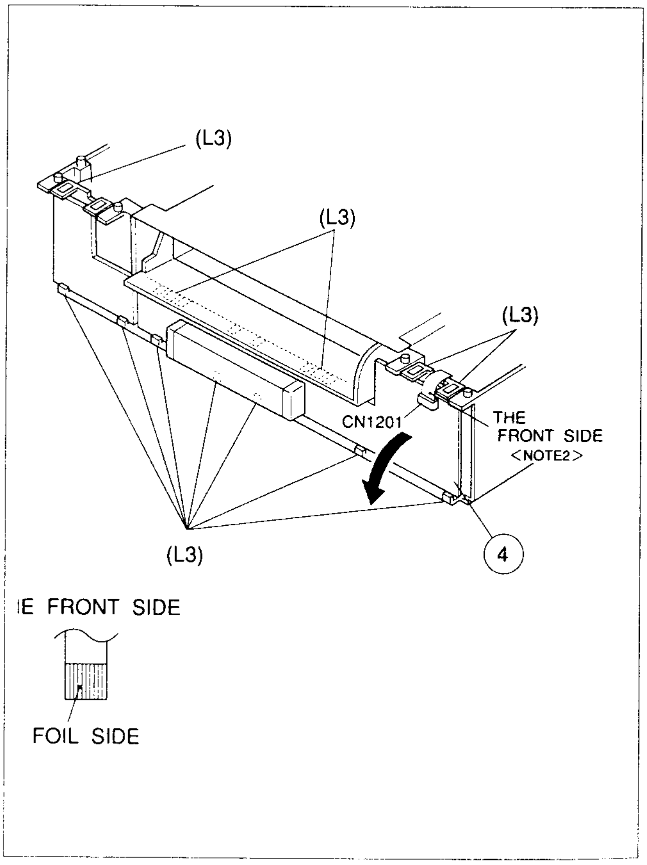

(L3)
(L3)
(L3)
CN1201
THE FRONT SIDE <NOTE2>
(L3)
4
E FRONT SIDE
FOIL SIDE

Fig. D4

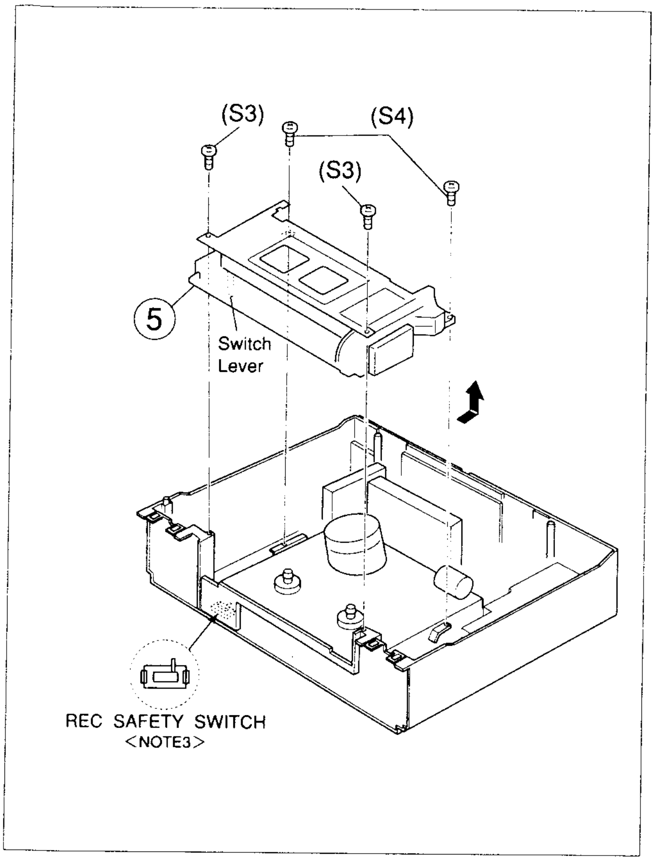

(S3)
(S4)
(S3)
5
Switch Lever
REC SAFETY SWITCH
<NOTE3>

Fig. D5

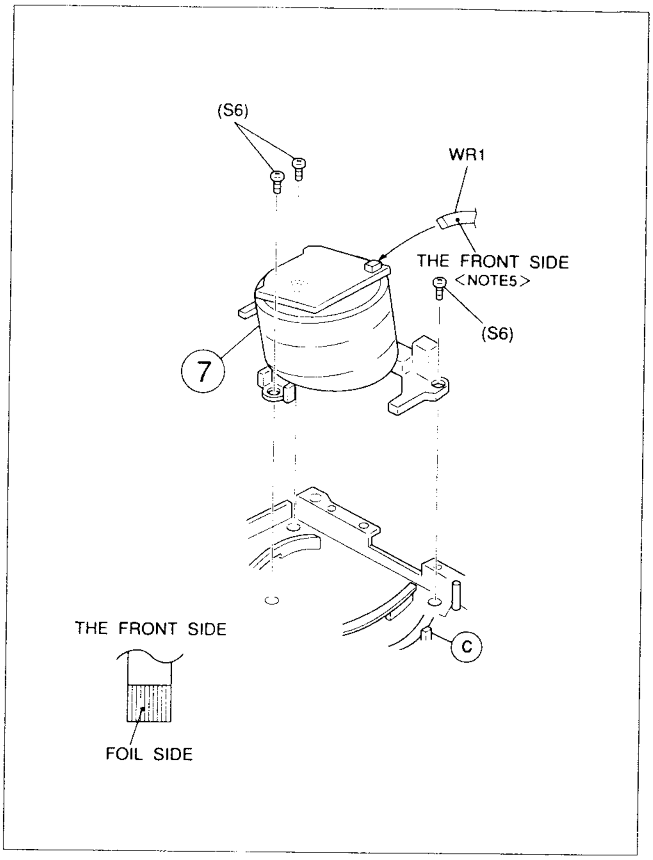

(S6)
WR1
THE FRONT SIDE
<NOTE5>
(S6)
7
C
THE FRONT SIDE
FOIL SIDE

Fig. D7

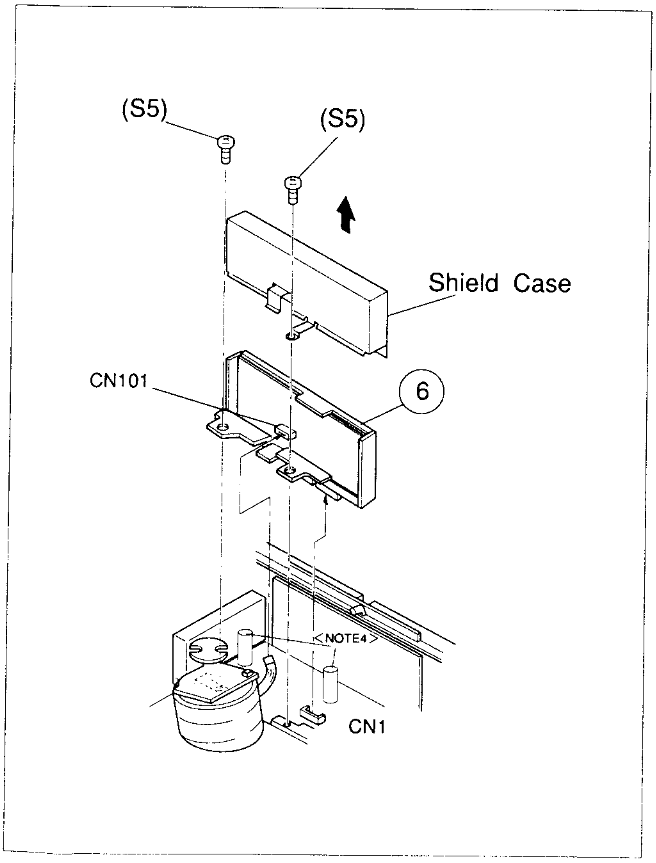

(S5)
(S5)
Shield Case
CN101
6
<NOTE4>
CN1

Fig. D6

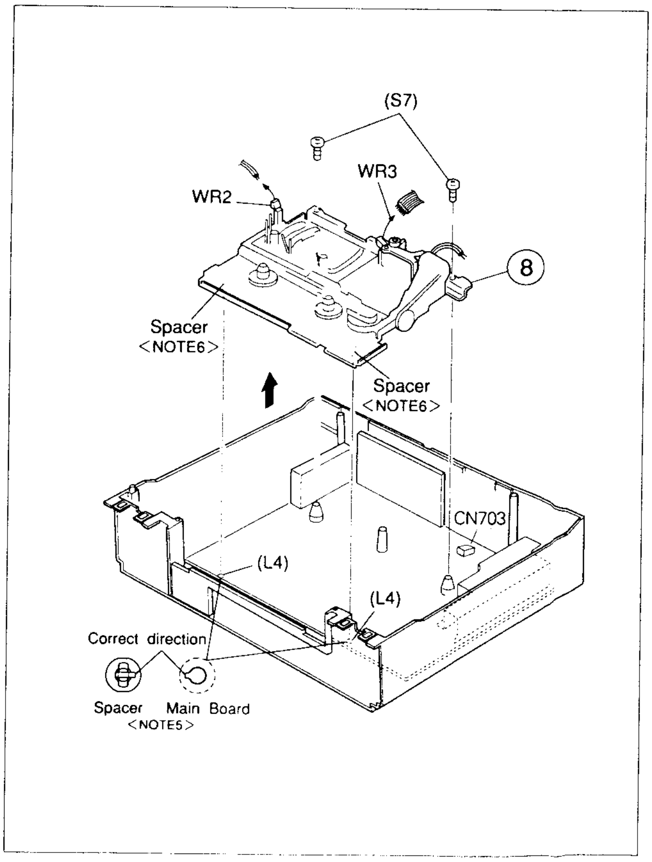

(S7)
WR3
WR2
8
Spacer
<NOTE6>
Spacer
<NOTE6>
CN703
(L4)
(L4)
Correct direction
Spacer
Main Board
<NOTE5>

Fig. D8

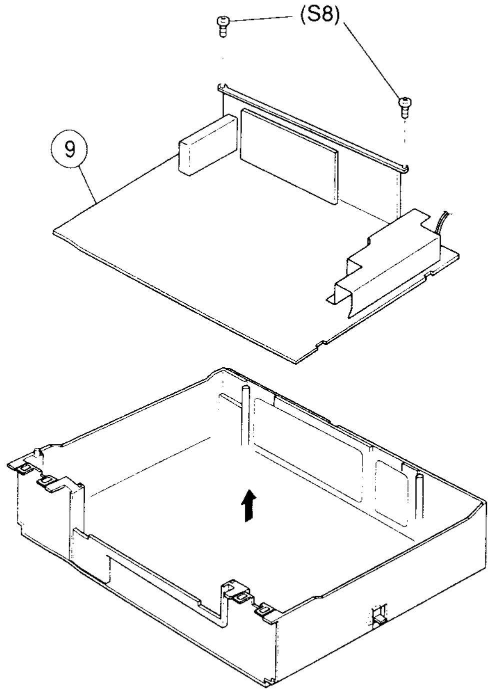


Fig. D9

1.4 CASSETTE HOUSING INSTALLATION

NOTE: *Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.*

1. Check that the hole of the control cam are aligned to the deck hole. If necessary, turn the mode motor belt by hand to adjust the position.

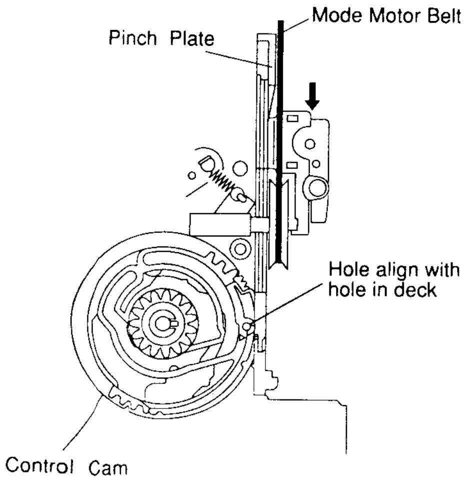


Fig. 1-4-1

1.5 SERVICE POSITION

1.5.1 How to take out the Mechanism and Main board assemblies.

(1) Remove the Top cover, Front panel assembly, and CN1201 and SW/DISPLAY board assembly.

(2) Take out 4 screws Ⓐ 2 screws Ⓑ and 1 screw Ⓒ as shown in Fig.1-5-1.

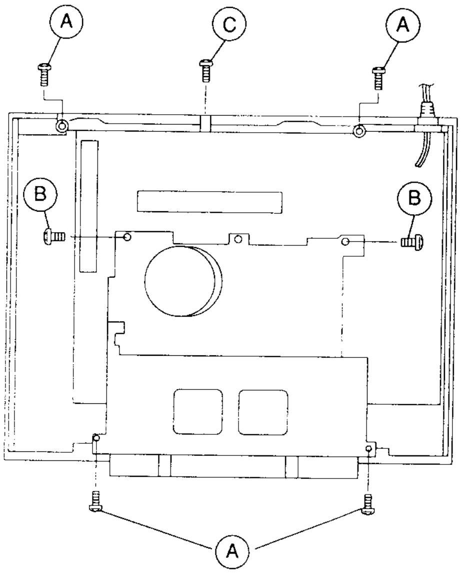


Fig. 1-5-1

(3) Remove the Mechanism assembly (including Cassette housing) and Main board assembly out of the chassis as shown in Fig. 1-5-2.

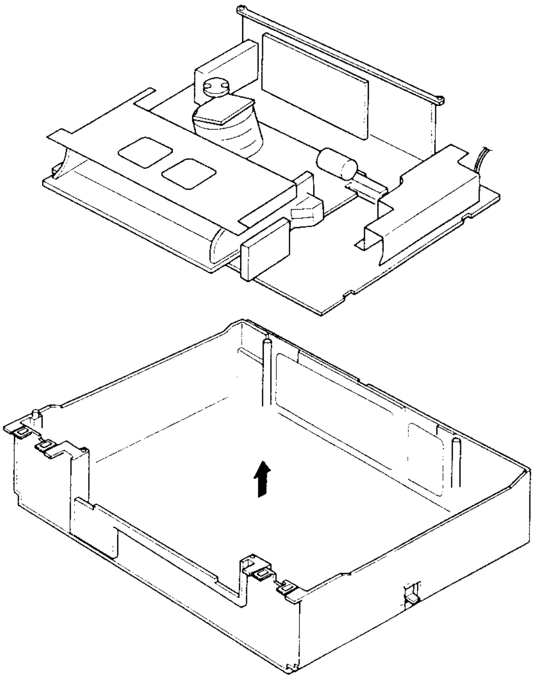


Fig. 1-5-2

(5) Turn over the Mechanism assembly and Main board assembly then connect CN1201of the SW/DISPLAY board assembly.

(6) Carry out checks & repairs as necessary as shown in Fig.1-5-3.

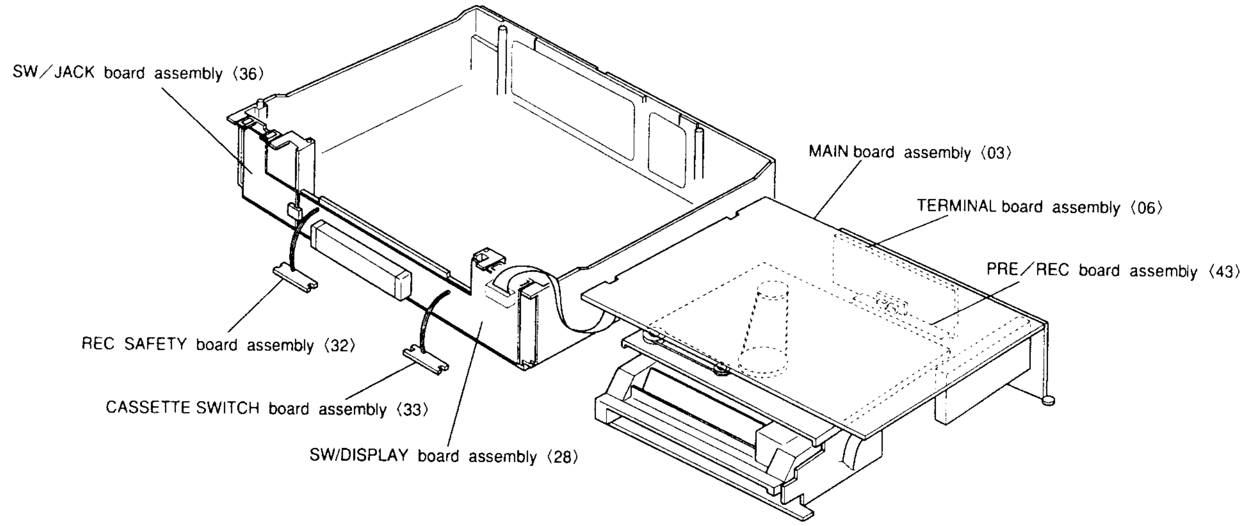

SW/JACK board assembly (36)
MAIN board assembly (03)
TERMINAL board assembly (06)
PRE/REC board assembly (43)
REC SAFETY board assembly (32)
CASSETTE SWITCH board assembly (33)
SW/DISPLAY board assembly (28)

Fig. 1-5-3

1.5.2 Cautions on cassette loading when mechanism is in service position

The REC SAFETY board assembly of this set serves both for detecting the safety tab (erasure prevention tab) of a cassette and detecting a cassette loaded. Therefore, cassette loading in the condition that the mechanism is disassembled from the set needs manual operation of the switches of the REC SAFETY board assembly and the CASSETTE SWITCH board assembly.

1.5.3 Cassette loading and ejecting procedures when mechanism is in service position

(1) Insert a cassette tape halfway into the cassette housing assembly.

(2) Press the switch of the REC SAFETY board assembly to turn on.

(3) When the cassette loading begins and the cassette goes down to the bottom, immediately press the switch of the REC SAFETY board assembly to turn off and hold the status that the switch of the CASSETTE SWITCH board assembly is turned on. (Fix the switch with adhesive tape or put a screwdriver, etc. on it to leave the switch in the ON status.)

(4) In this status, desired operations (recording, playback, fast forward, rewind, etc.) can be performed.

Note: *When the mechanism is in the service position, the safety tab of cassette tape is not detected and recording on cassette tapes without safety tab is possible. Therefore, carefully choose a cassette tape for operation in this mode so as to avoid using cassette tapes of important recording.*

(5) For ejecting the cassette in this status, do it in the reverse order of cassette loading mentioned above.

Note: *If the manual operation REC SAFETY switch timing is incorrect, the cassette may be completely or partially ejected, and the cassette is often ejected incompletely. In such a case, it is possible to take out the cassette by hand.*

If it is desired to load a cassette again after the cassette is ejected in the above procedure, make sure to set the tray of the cassette housing assembly in the frontmost position prior to loading the cassette once again.

1.5.4 Opening on the chassis.

The chassis assembly has openings for easy access to the checkpoints and connector pins as shown in Fig.1-5-4.

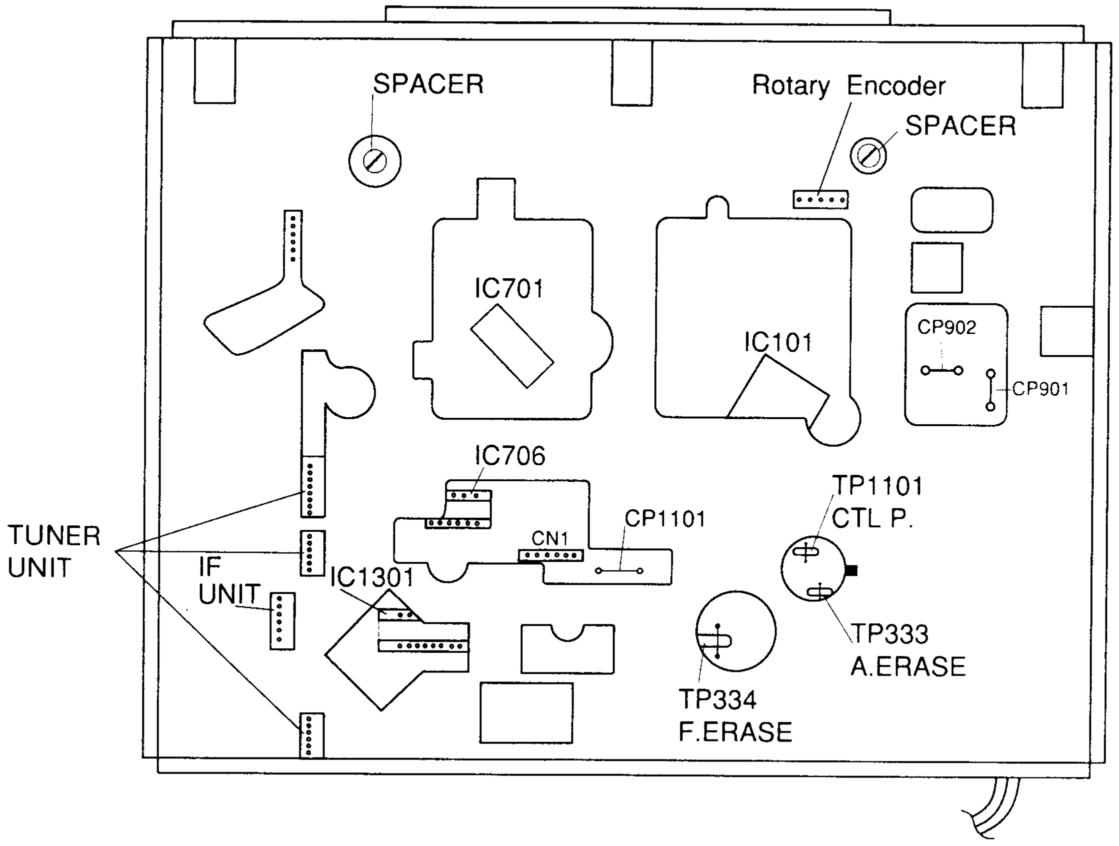

SPACER
Rotary Encoder
SPACER
IC701
IC101
CP902
CP901
IC706
TP1101
CTL P.
CP1101
CN1
TUNER
UNIT
IF
UNIT
IC1301
TP333
A.ERASE
TP334
F.ERASE

Fig. 1-5-4

1.6 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.6.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Remove the Top cover, Front panel assembly and cassette housing assembly. (See Page 1-2, 1-3)
(3) Connect TP1202 (GND) and TP1201 (TEST) on the SW/DISPLAY board assembly with a jump wire.
(4) Connect VCR to AC.
(5) Press the POWER button.
(6) Select the desired operation modes with the operation buttons or remote controller.

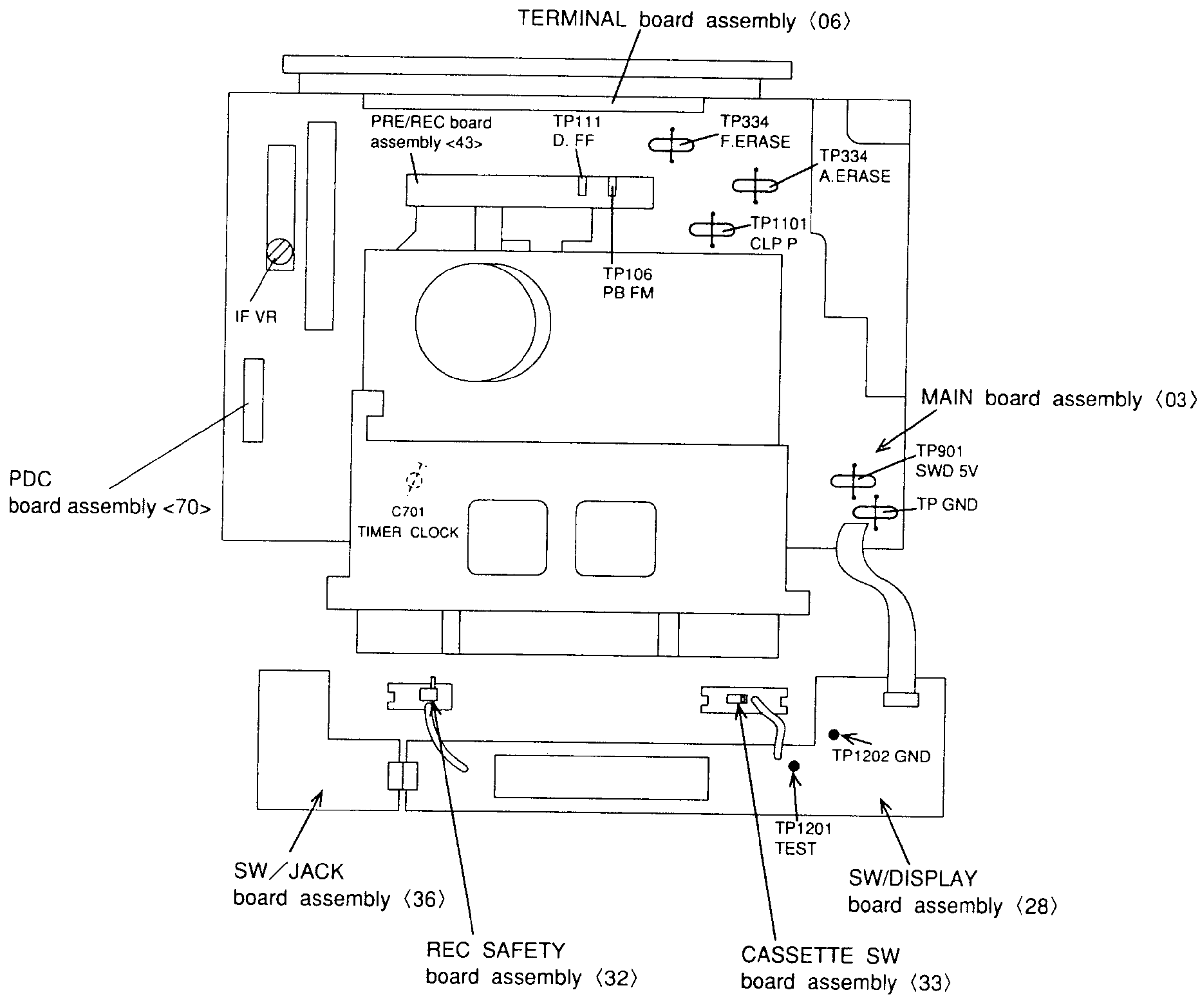

TERMINAL board assembly 〈06〉
PRE/REC board assembly <43>
TP111 D. FF
TP334 F.ERASE
TP334 A.ERASE
TP1101 CLP P
TP106 PB FM
IF VR
MAIN board assembly 〈03〉
TP901 SWD 5V
TP GND
PDC board assembly <70>
C701 TIMER CLOCK
TP1202 GND
TP1201 TEST
SW/JACK board assembly 〈36〉
SW/DISPLAY board assembly 〈28〉
REC SAFETY board assembly 〈32〉
CASSETTE SW board assembly 〈33〉

Fig. 1-6-1

1.7 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.7.1 How to display record of an emergency faults

(1) Press "N" button of the presetting unit more than 2 seconds. and the two previous emergency faults are shown in the FDP.

(2) Press "N" button of the presetting unit again when return the normal mode.

[Example] E : 01 : 03

Emergency faults before last

Emergency faults of the last time

[Example] E : — — : — — ← No record of emergency

1.7.3 How to clear emergency record

Press the COUNTER RESET button on the remote controller in the emergency record display mode,and the record of the emergency fault(s) is cleared.

1.7.2 Detail of emergency faults

FDP	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent(for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 04	DRUM FF input is absent(for more than 3 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP
E : 06	CAPSTAN FG input is absent(for more than 1 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF

Table 1-7-1 EMERGENCY FAULTS

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

(1) Disconnect VCR from AC power before soldering.
(2) Avoid imparting stress to wires when disengaging connectors.
(3) Determine and correct the cause of difficulty before proceeding to adjustments.Do not disturb settings unnecessarily.
(4) Use care not to damage tabs,claws,etc during repairs.
(5) Install the cassette housing assembly only when the mechanism is in the MECHANISM ASSEMBLING MODE position.
(6) When installing the Front panel assembly,be sure to engage the housing door with the door opener of the cassette housing assembly.
If this is omitted,the cassette door will not open at Eject and the cassette can not be removed. (See SECTION 1 DISASSEMBLY.)

2.1.2 Check without cassette housing assembly.

Mechanism operations can be observed easily by removing the cassette housing assembly. Use the MECHANISM SERVICE MODE. (See SECTION 1 DISASSEMBLY.)

2.1.3 Manual removal of loaded tape

When the deck enters the emergency mode with cassette tape loaded and it can not be ejected by pressing the EJECT button,take out of the cassette tape according to the following procedure.

(1) Disconnect the power cord from AC outlet then take out the Top cover and Front panel assembly.
(2) Turn the mode motor on the Main deck assembly by hand in the unloading direction to where the pole base assembly (supply and take-up) is positioned below the cassette tape.At that time, pay careful attention to the tape not to get soiled with grease.
(3) Take out 4 screws of the cassette housing assembly.(See SECTION 1 DISASSEMBLY.)
(4) Remove the cassette housing with slackened tape and guard panel of cassette.
(5) Wind up the tape by turning the reel hub(either supply or take-up side for convenience) from the bottom of the cassette,and remove the cassette tape.

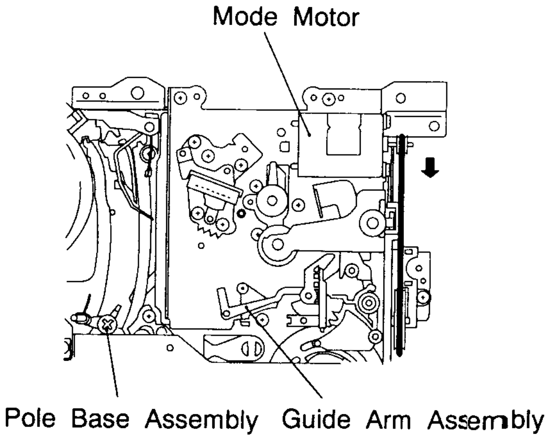


Fig. 2-1-1

2.1.4 Test Equipment

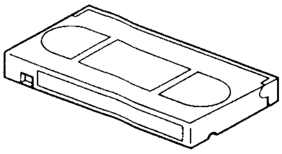
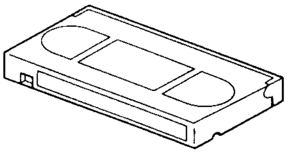
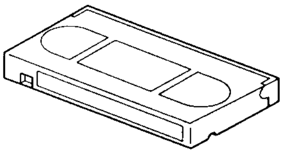
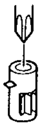
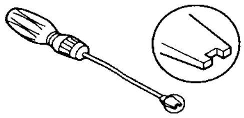
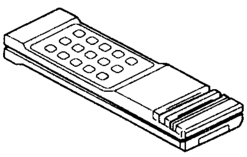
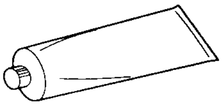
Alignment tape (SP) MHPE	Alignment tape (LP) MHPE-L	Back tension cassette gauge PUJ48076-2	A/C head positioning tool PTU94010
			
Roller driver PTU94002	Presetting unit PTU94008	Grease KYODO-SH-P	
			

Table 2-1-1 Test equipment

2.2 MAIN MECHANISM PARTS

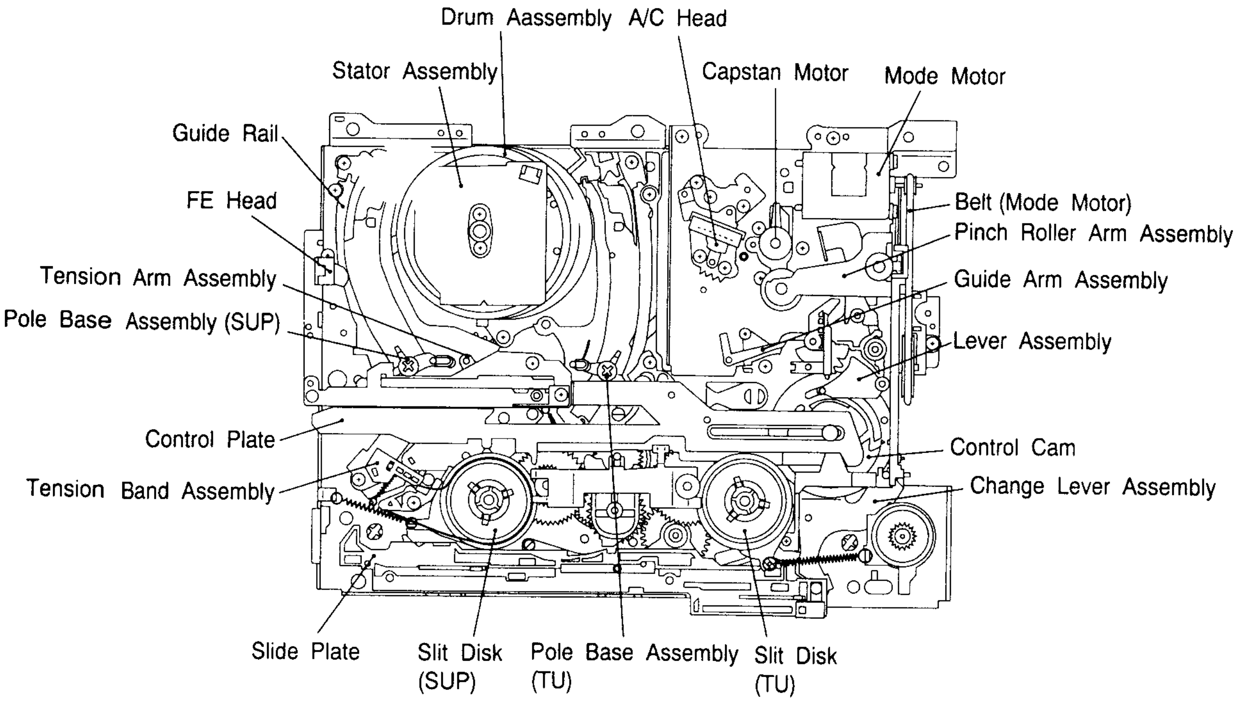

Drum Aassembly
A/C Head
Stator Assembly
Capstan Motor
Mode Motor
Guide Rail
FE Head
Belt (Mode Motor)
Pinch Roller Arm Assembly
Tension Arm Assembly
Guide Arm Assembly
Pole Base Assembly (SUP)
Lever Assembly
Control Plate
Control Cam
Tension Band Assembly
Change Lever Assembly
Slide Plate
Slit Disk (SUP)
Pole Base Assembly (TU)
Slit Disk (TU)

Fig. 2-2-1 Top view of main deck

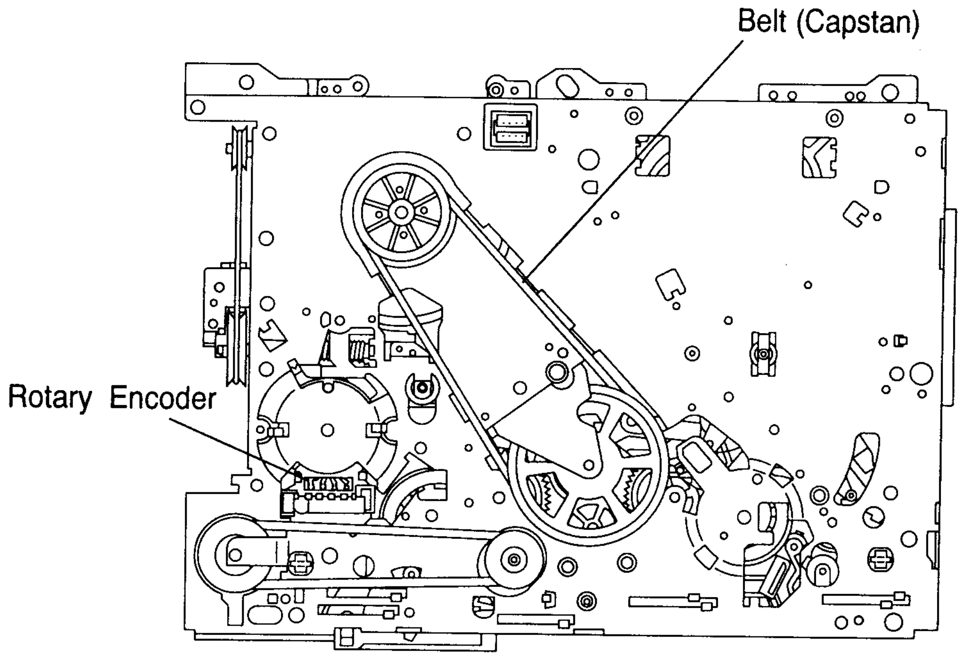


Fig. 2-2-2 Bottom view of main deck

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable,but usually not feasible in practice.Therefore,perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads,tape guides and brush can detract from playback picture quality and in extreme cases,even damage the tape.For cleaning,use a finemesh cotton cloth(about the texture of a white dress-shirt) moistened in alcohol. It is recommended to also clean the tape tension posts and capstan.

- To clean the video heads,press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke,as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenishing. Apply only when replacing lubricated parts(also clean and replace lubrication of mating parts if soiled). For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly. Before oiling,clean with alcohol.Apply one or two drops of oil. Avoid excess oil.

1. Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KYODO-SH-P

Table 2-2-1

2. Grease is not required for a replacement cassette housing assembly,as this has been applied at the factory.

NOTE : *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage.Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum motor assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Belt (Capstan)	○	○
	Belt (Mode motor)		○
	Mode motor		○
	Slit disk (supply, take-up)		○
	Clutch unit (supply, take-up)		○
	Worm gear assembly		○
	Control plate		○
	Slide plate		○
Other	Brush assembly	★○	★○
	Tension band assembly	○	○
	Rotary encoder		○

★ : Cleaning

○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 DISASSEMBLY/ASSEMBLY PROCEDURE OF MECHANISM

2.4.1 Precaution before disassembling mechanism

This mechanism has an exclusive operation mode provided for disassembling and installation of the mechanism (MECHANISM ASSEMBLING MODE), and it is suggested to set the mechanism to this mode before disassembly and installation.The exclusive mechanism operation mode is not generally used and becomes available by manual setting only. Then this procedure starts with the condition that the cabinet parts,cassette housing assembly and PRE/REC board assembly have been removed.

2.4.2 How to set the exclusive mechanism operation mode (MECHANISM ASSEMBLING MODE)

(1) Turn the mode motor belt by hand.

(2) Confirm that the hole of the control cam are aligned to the deck hole as shown in Fig.2-4-1.

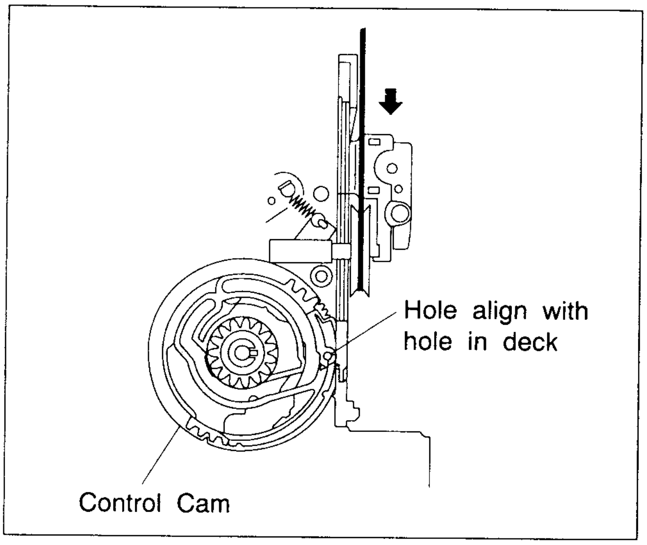


Fig. 2-4-1

2.5 MAIN PARTS REPLACEMENT OF MECHANISM

2.5.1 Pinch Rollar Arm Assembly

(1) Remove the slit washer.

(2) Tilt up the pinch rollar assemby in direction of arrow.

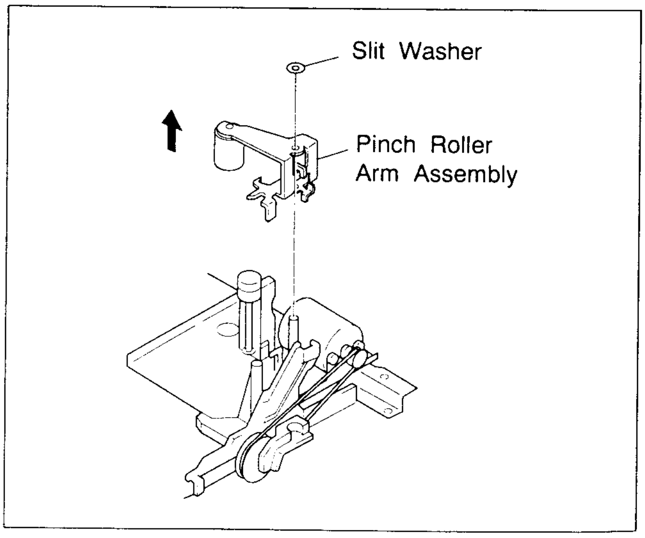


Fig.2-5-1

2.5.2 A/C Head

1. Removal

(1) Take out 2 screws (A).

(2) Remove the A/C head with head base.

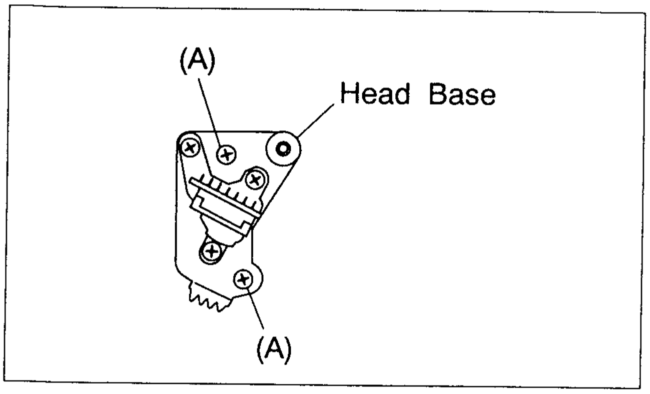

(A)
Head Base
(A)

Fig.2-5-2

(3) When replacing the A/C head only,remove 3 screws (B), use care not to misplace the 3 springs.

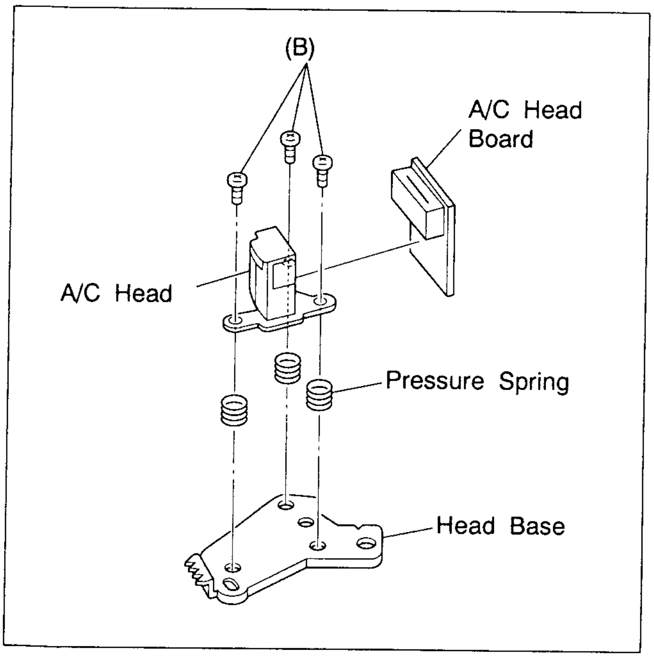

(B)
A/C Head Board
A/C Head
Pressure Spring
Head Base

Fig.2-5-3

2. Installation

(1) Temporarily set A/C head height as indicated in Fig. 2-5-4.

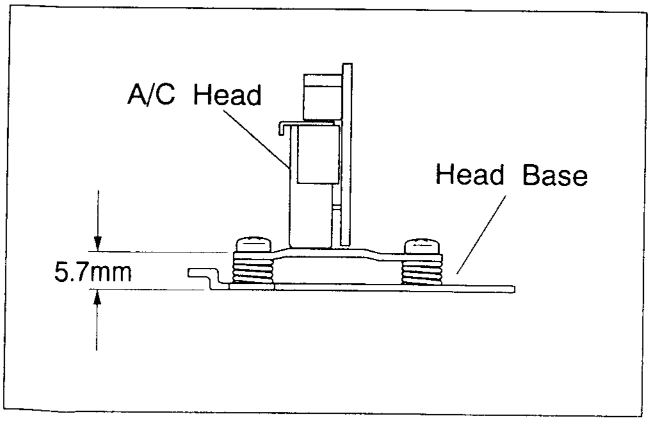

A/C Head
Head Base
5.7mm

Fig.2-5-4

NOTES:

- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.5.3 Pinch Plate

1. Removal

(1) Disengage 2 claws, then remove the pinch plate.

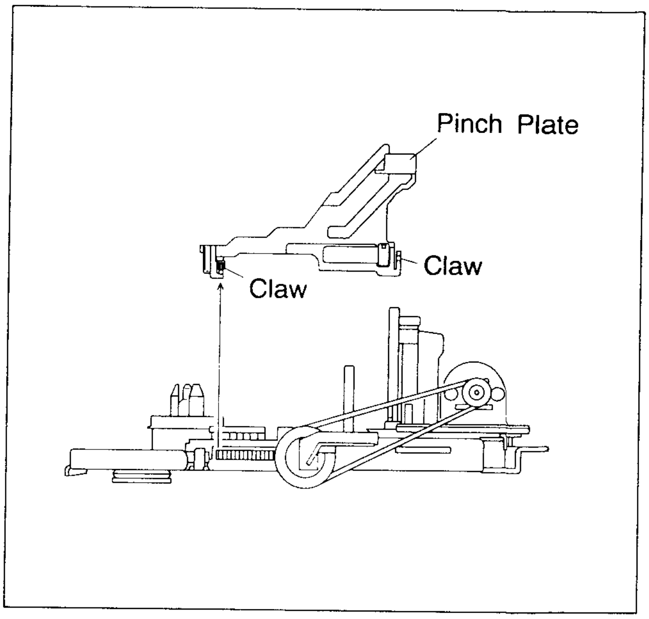

Pinch Plate
Claw
Claw

Fig.2-5-5

2. Installation

(1) When installing pinch plate,align rack of pinch plate and triangle mark of control cam as indicated in Fig.2-5-6.

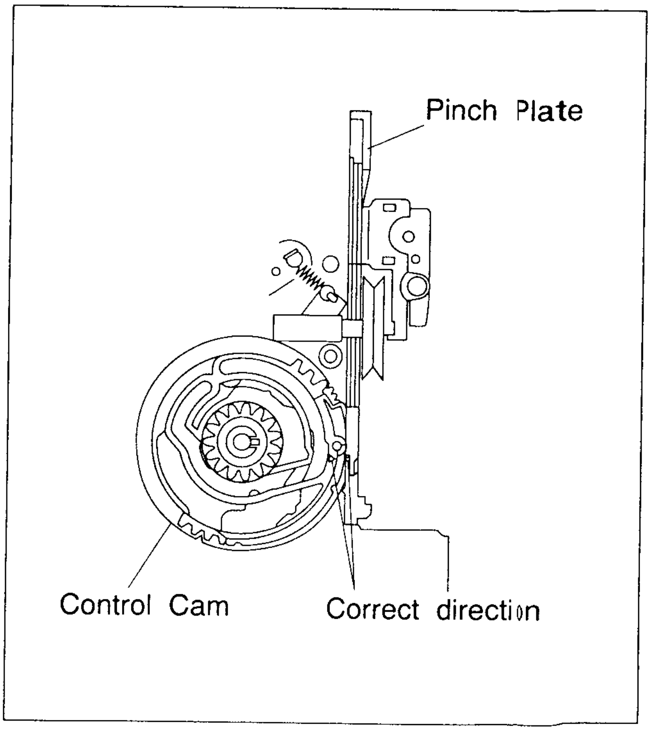

Pinch Plate
Control Cam
Correct direction

Fig. 2-5-6

2.5.4 Mode Motor

(1) Disengage the belt between mode motor and worm gear.
(2) Take out 2 screws (A) then remove the mode motor.

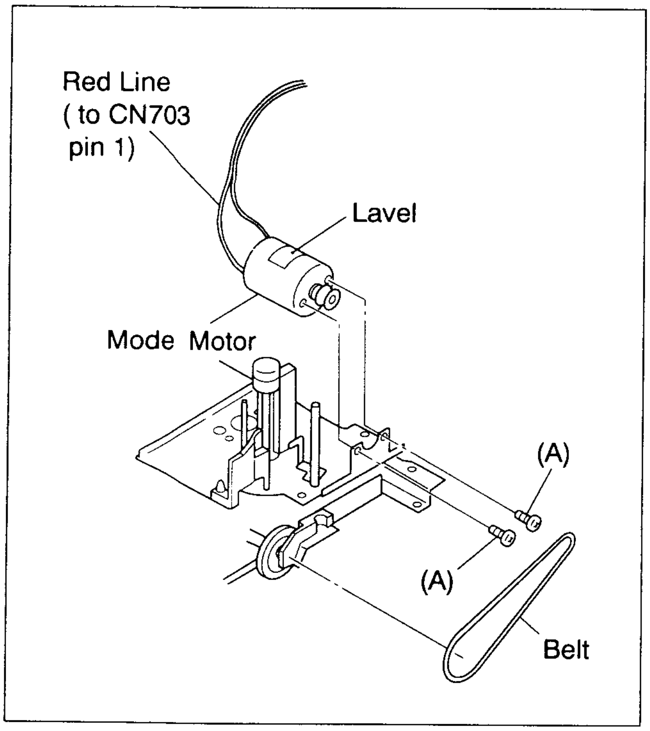

Red Line
(to CN703
pin 1)
Lavel
Mode Motor
(A)
(A)
Belt

Fig.2-5-7

2.5.5 Lever Assembly,Sub Deck Assembly,Capstan Motor

(1) Take out 1 slit washer,then remove the lever assembly.
(2) Disengage the belt(capstan motor) from bottom of mechanism assembly first as indicated in Fig.2-5-10.
(3) Take out 3 screws (A) and remove the sub deck assembly as indicated in Fig.2-5-8.
(4) Take out 3 screws (B) and remove the capstan motor from the sub deck assembly as indicated in Fig.2-5-9.

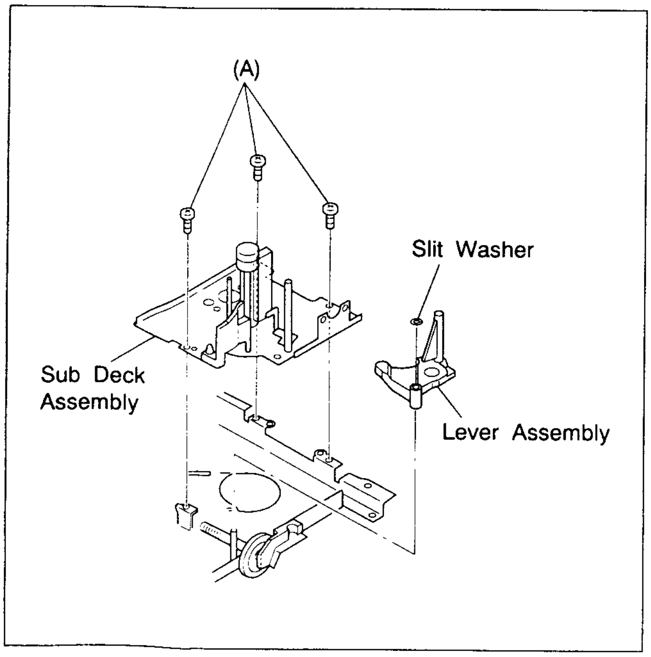

(A)
Slit Washer
Sub Deck
Assembly
Lever Assembly

Fig.2-5-8

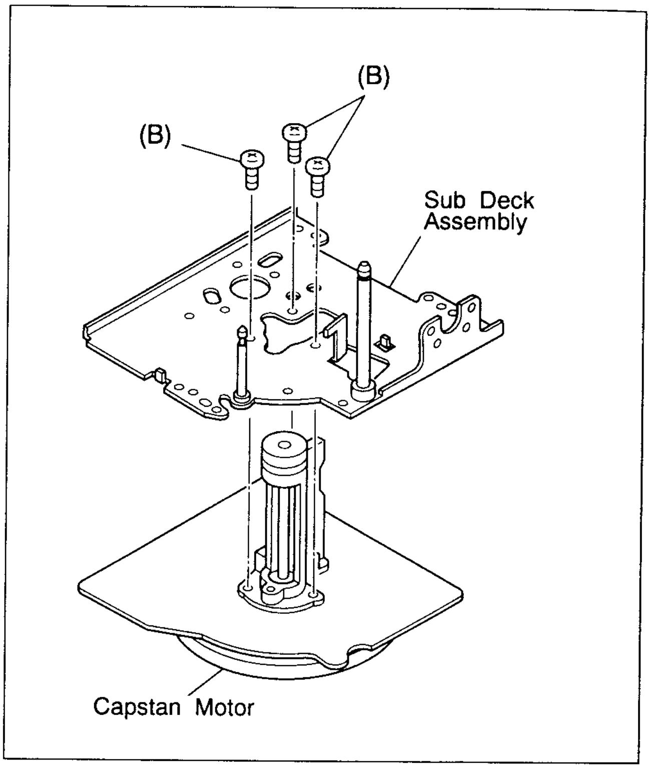

(B)
(B)
Sub Deck
Assembly
Capstan Motor

Fig.2-5-9

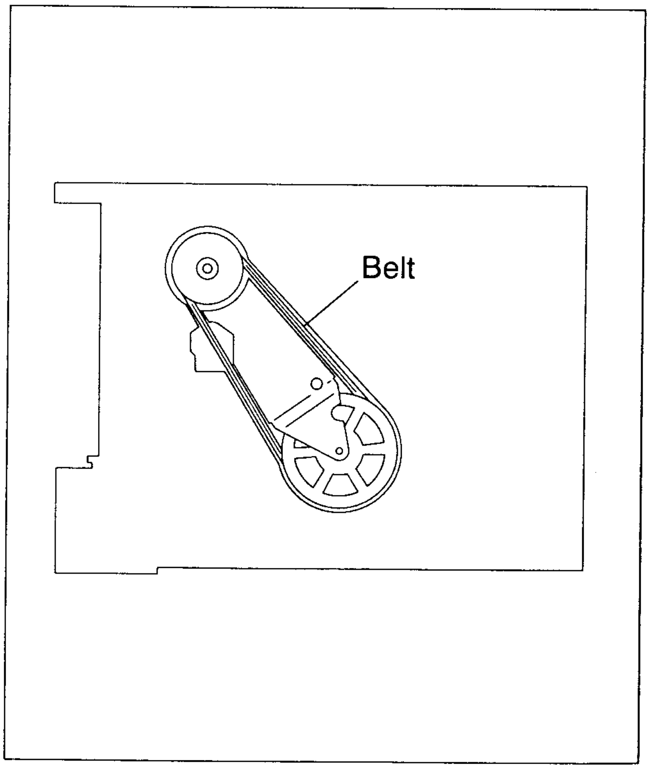


Fig.2-5-10

2.5.6 Control Bracket-1,Earth Plate

(1) Take out 1 screw (A) and 1 screw (B).
(2) Remove the control bracket-1 and earth plate.

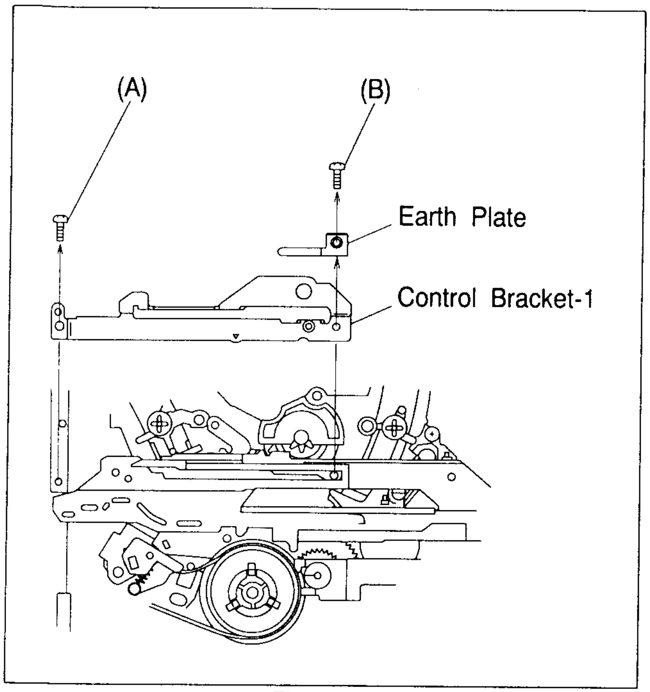

(A)
(B)
Earth Plate
Control Bracket-1

Fig.2-5-11

2.5.7 Reel Bracket,Slit disk (take-up)

(1) Take out 2 slit washers.
(2) Remove the reel bracket and slit disk(take-up).

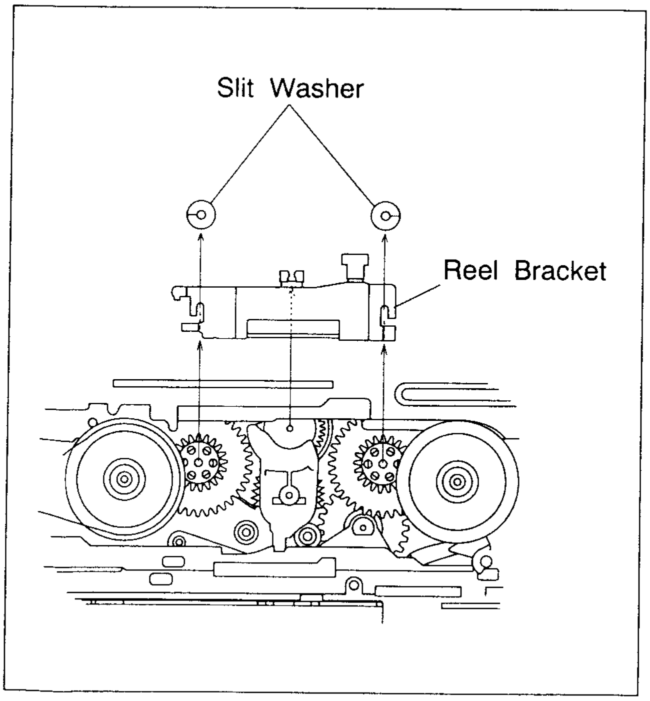

Slit Washer
Reel Bracket

Fig.2-5-12

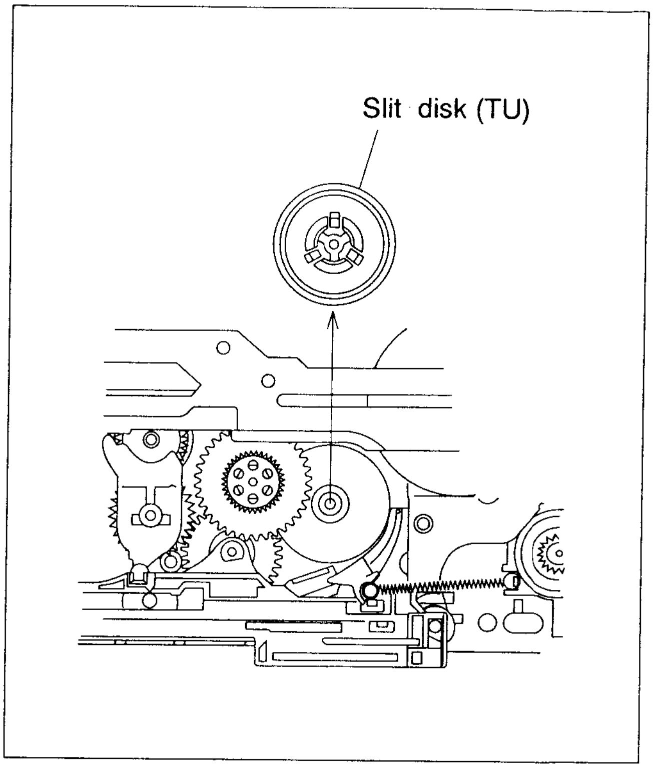

Slit disk (TU)

Fig.2-5-13

2.5.8 Control Bracket-2,Control Plate

(1) Take out 1 screw (A) and remove the control bracket-2.
(2) Take out 1 slit washer.
(3) Disengage 2 claws and remove the control plate.

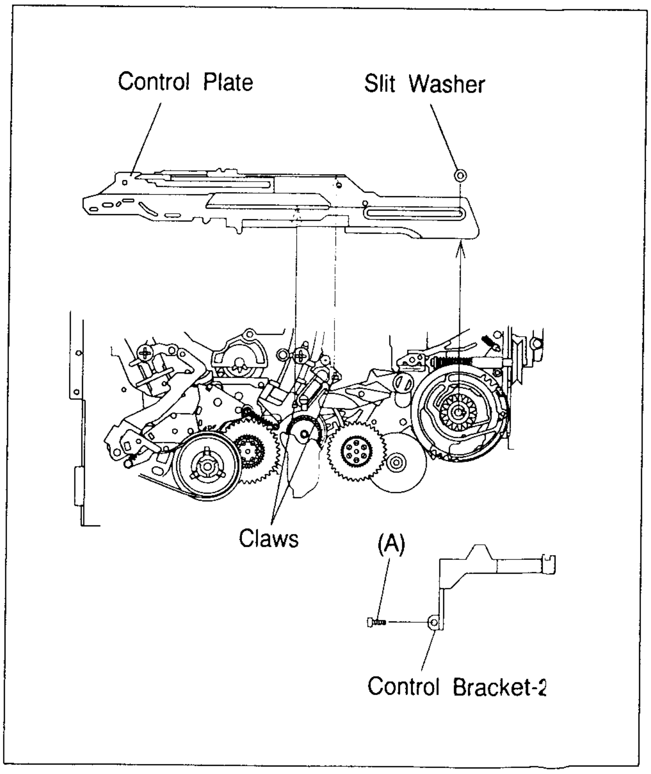

Control Plate
Slit Washer
Claws
(A)
Control Bracket-2

Fig.2-5-14

2.5.9 Sub Brake(take-up),Control Cam

(1) Disengage 1 spring (a) and 1 claw then remove the sub brake (take-up).

(2) Disengage 1 claw and remove the control cam.

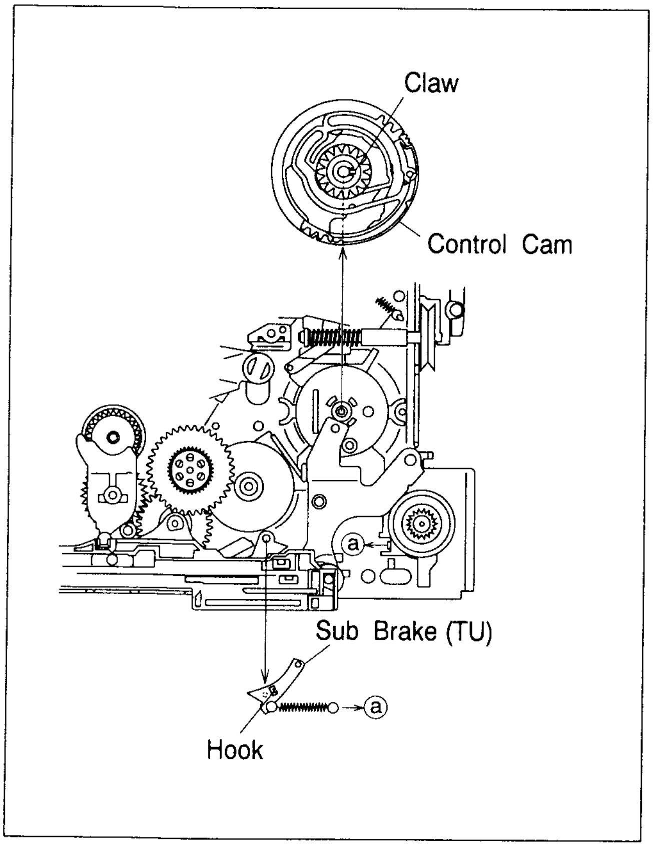

Claw
Control Cam
a
Sub Brake (TU)
a
Hook

Fig.2-5-15

2.5.10 Slide Plate

(1) Disengage 7 claws from bottom of the mechanism assemby and remove the slide plate.

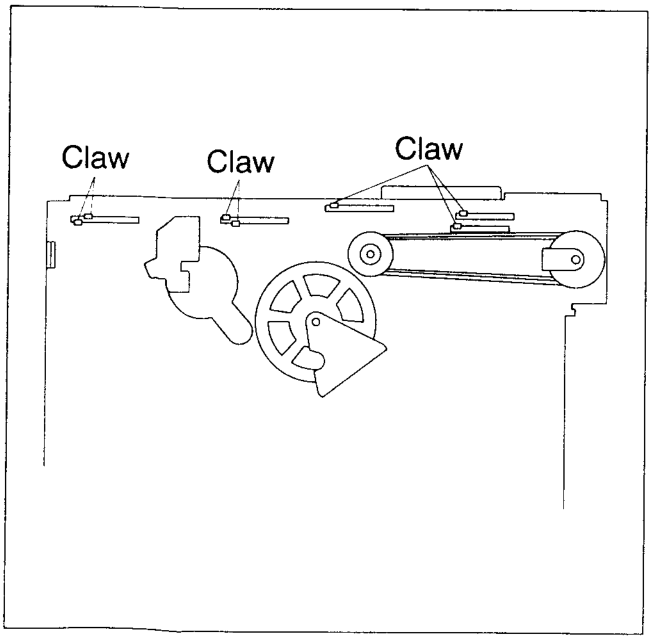

Claw
Claw
Claw

Fig. 2-5-16

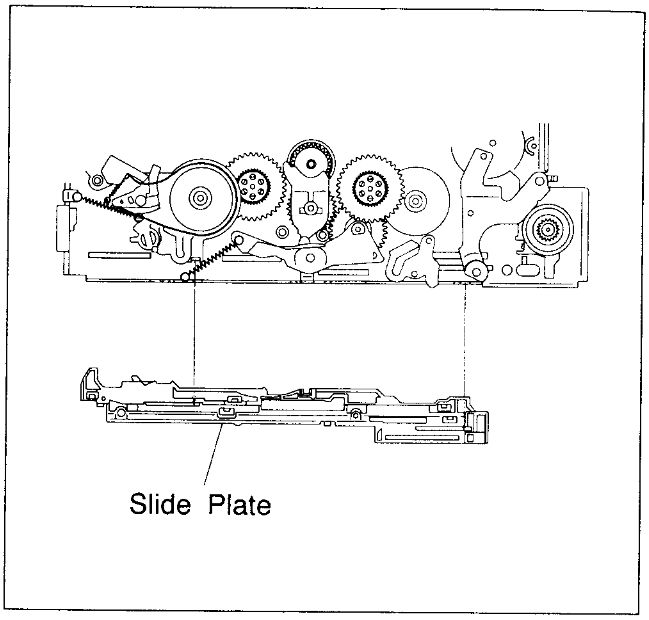

Slide Plate

Fig. 2-5-17

2.5.11 Change Lever,Rotary Encoder

(1) Remove the change lever.

(2) Disengage 2 claws and remove the rotary encoder.

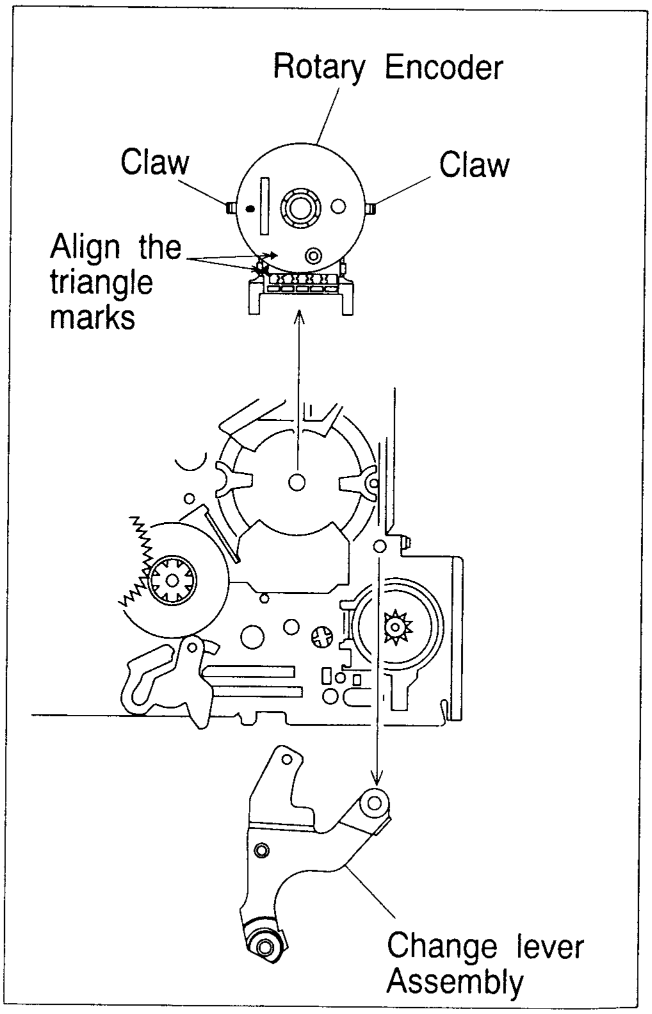

Rotary Encoder
Claw
Claw
Align the triangle marks
Change lever Assembly

Fig. 2-5-18

2.5.12 Sub Brake (supply),Tension Band Assembly,Tension Arm Assembly,Take-up Lever Assembly,Slit Disk(supply)

(1) Disengage 1 spring (a).
(2) Disengage 1 claw and remove the sub brake (supply).
(3) Take out 1 screw (A),spring (c) and slit washer.
(4) Remove the tension arm assembly with tension band assembly.
(5) Disengage 1 spring (b) and remove the take-up lever assembly.
(6) Remove the slit disk(supply).

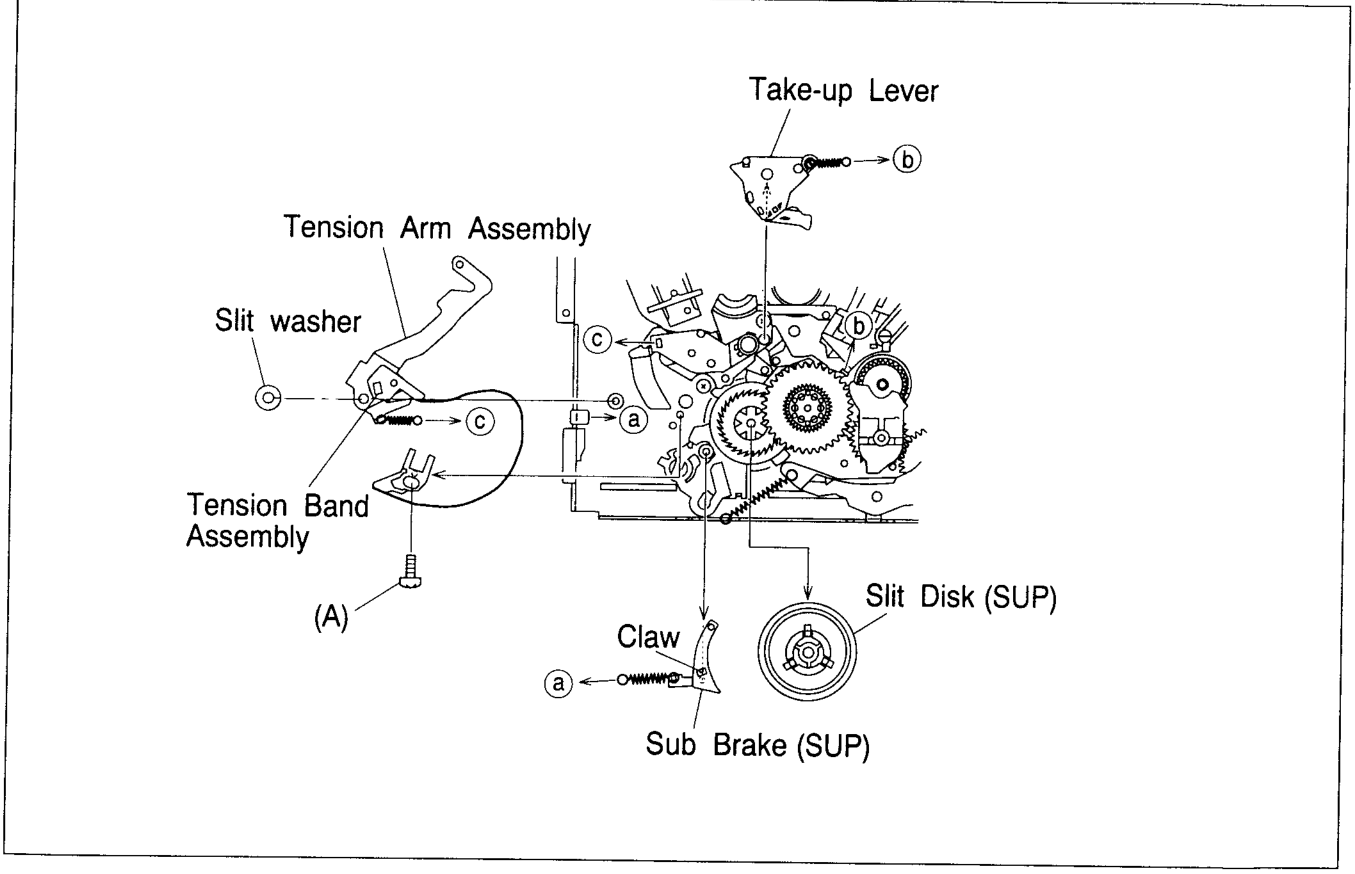

Take-up Lever
ⓑ
Tension Arm Assembly
Slit washer
ⓒ
ⓑ
ⓐ
ⓒ
Tension Band Assembly
(A)
Slit Disk (SUP)
Claw
ⓐ
Sub Brake (SUP)

Fig. 2-5-19

2.5.13 Take-up Head,Tension Arm Lever

(1) Remove the take-up head and tension arm lever.

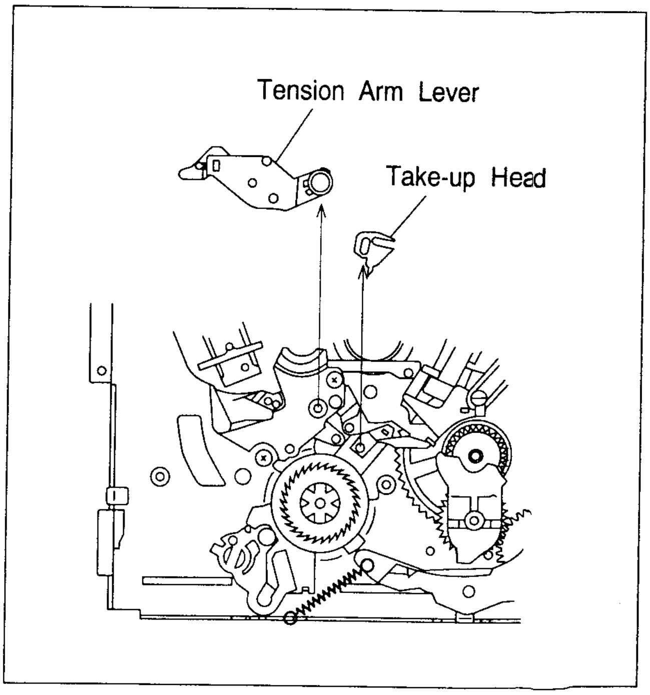

Tension Arm Lever
Take-up Head

Fig.2-5-20

2.5.14 Guide Rail

(1) Take out 5 screws (A) and 1 screw (B).

(2) Disengage 4 claws and remove the guide rail.

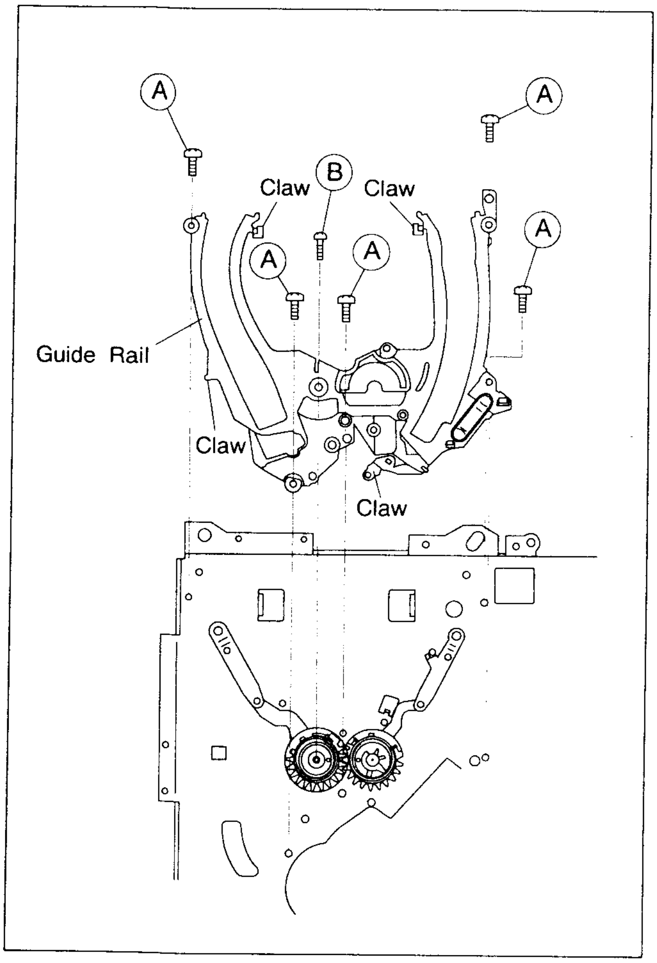

A
A
Claw
B
Claw
A
A
A
Guide Rail
Claw
Claw

Fig. 2-5-21

2.5.15 Stator Assembly

(1) Take out 2 screws (A).

(2) Raise the stator assembly in the direction indicated by the arrow to remove it.

(3) Remove the flat cable.

(4) To reinstall,first secure the flat cable,then insert 2 screws (A).

(5) After reinstalling, be sure to perform PB switching point adjustment(See SECTION 3 ELECTRICAL ADJUSTMENT).

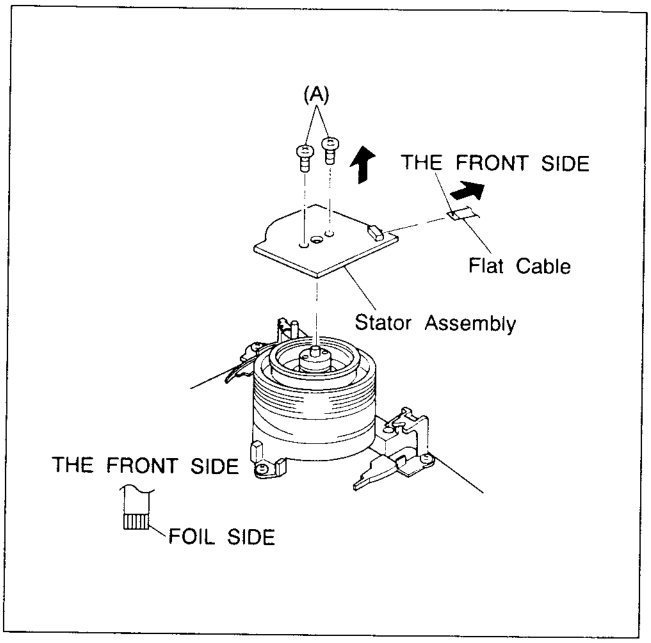

(A)
THE FRONT SIDE
Flat Cable
Stator Assembly
THE FRONT SIDE
FOIL SIDE

Fig. 2-5-22

NOTE : *When refitting the connector, check that the flat wire is inserted correctly.*

2.5.16 Rotor Assembly

(1) Remove the stator assembly.

(2) Take out 2 screws (B) and remove the rotor assembly.

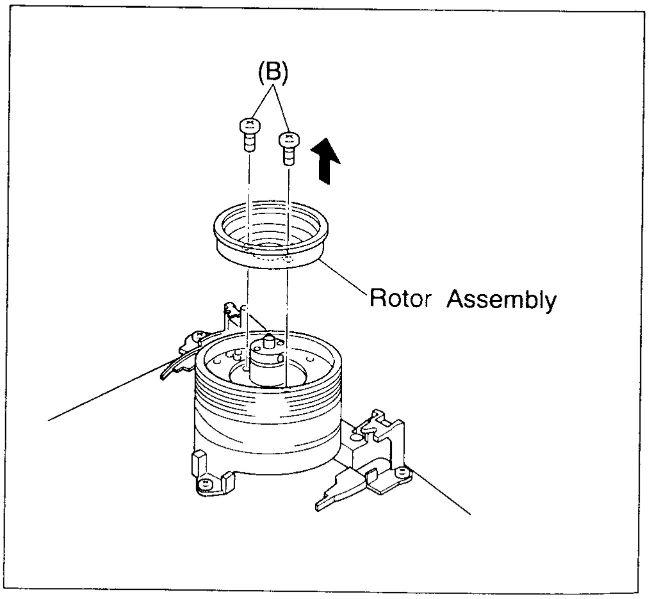

(B)
Rotor Assembly

Fig.2-5-23

(3) Align the upper drum assembly and rotor assembly phase as indicated in Fig.2-5-22.

(4) Overlap holes (a) of the upper drum assembly with holes (b) of the rotor assembly (align holes in 3 locations) and secure with 2 screws (B) as indicated in Fig.2-5-21.

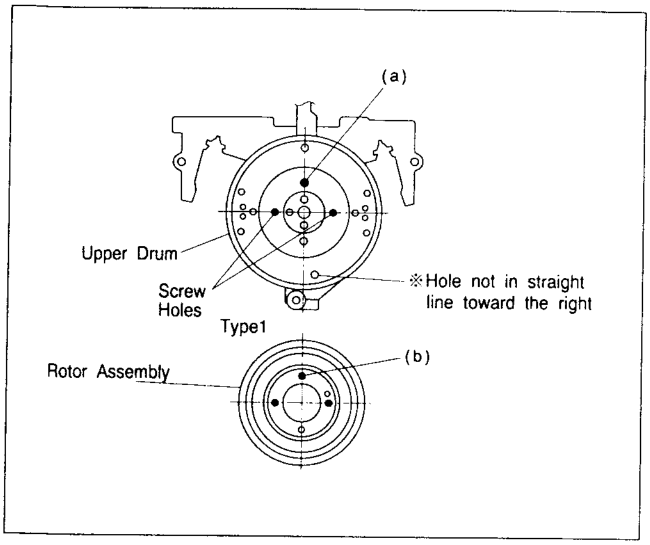

(a)
Upper Drum
Screw Holes
Type1
※Hole not in straight line toward the right
Rotor Assembly
(b)

Fig. 2-5-24

2.5.17 Upper Drum Assembly

1. Removal

(1) Remove the stator assembly and rotor assembly.

(2) Use a 1.5 mm hexagonal wrench to loosen the collar assembly screw and remove the collar assembly.

(3) Remove the upper drum assembly and use tweezers to remove the Washer.

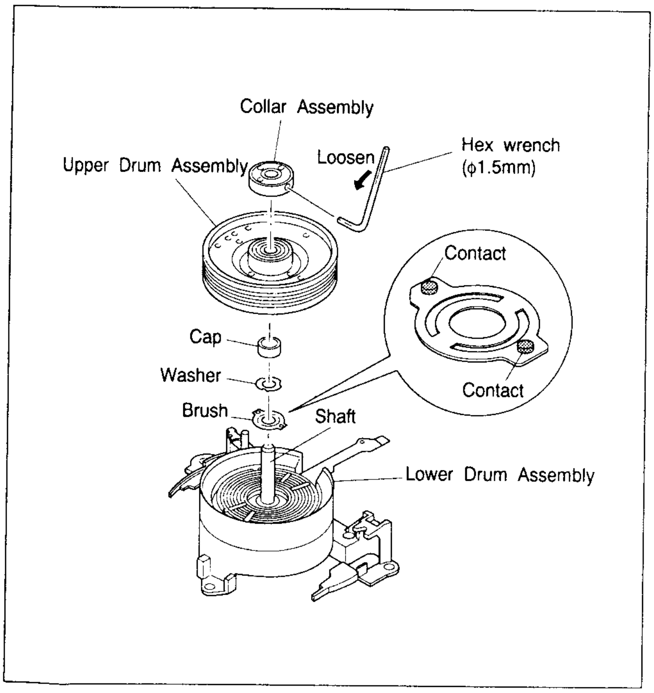

Collar Assembly
Upper Drum Assembly
Loosen
Hex wrench (φ1.5mm)
Contact
Cap
Washer
Brush
Shaft
Contact
Lower Drum Assembly

Fig. 2-5-25

NOTE : *If the Brush is replaced, do not apply the grease to the contacts.*

2. Installation

(1) Use an air brush to clean the lower drum assembly and the coil section of the new upper drum assembly.

(2) Set a new washer on the drum shaft as indicated in Fig.2-5-25.

NOTE : *Be sure to use the new washer when replace the upper drum assembly.*

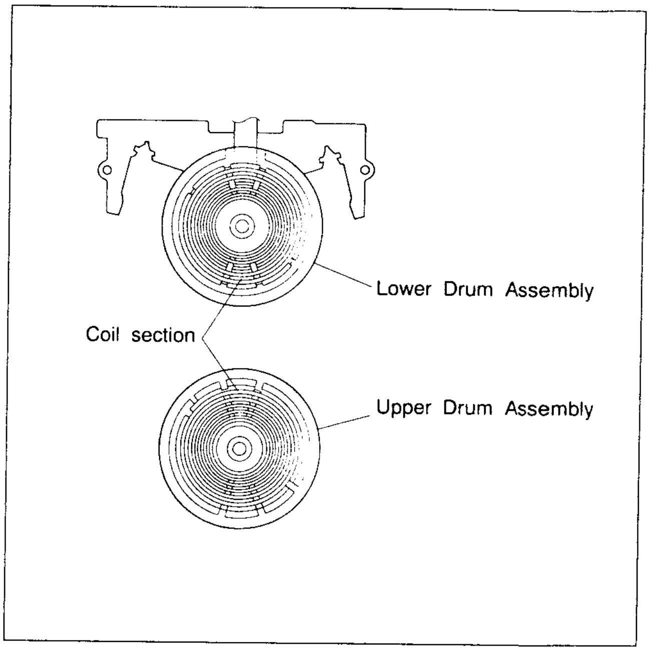

Lower Drum Assembly
Coil section
Upper Drum Assembly

Fig.2-5-26

(3) Note the top and bottom of the collar assembly and determine the position as indicated in Fig.2-5-25.

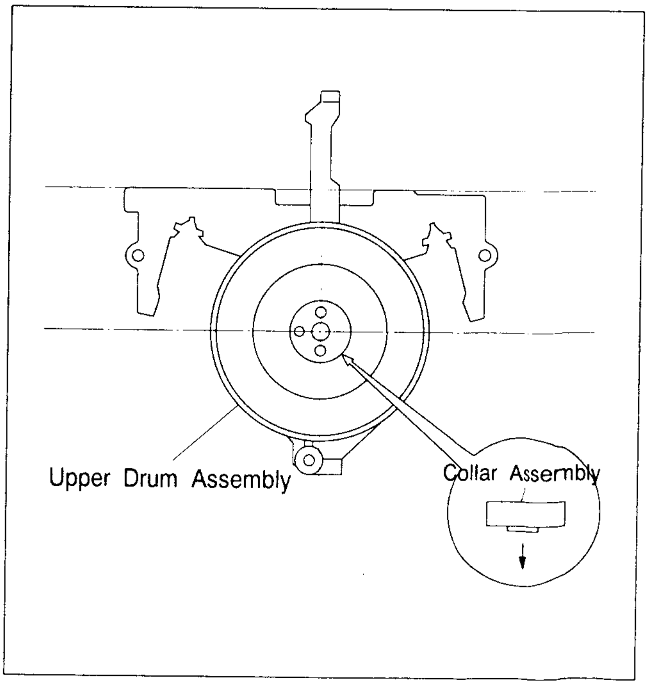

Upper Drum Assembly
Collar Assembly

Fig.2-5-27

(4) While pressing the collar assembly evenly from above with your fingertips,secure the hexagonal screw.

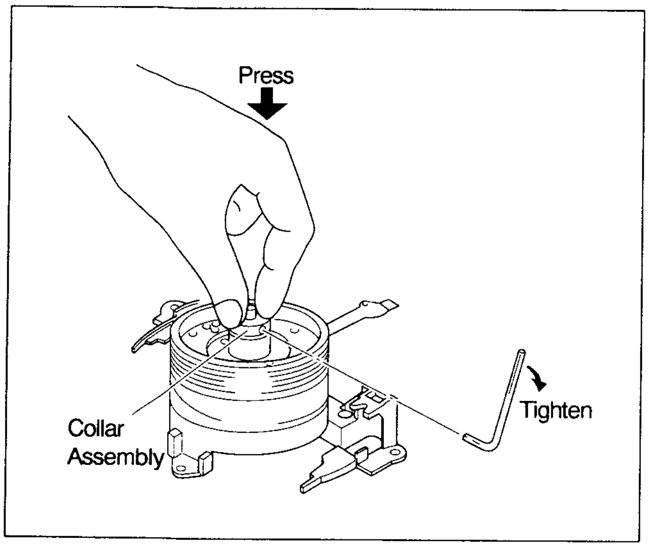

Press
Tighten
Collar Assembly

Fig.2-5-28

(5) After installing,gently turn the upper drum by hand and confirm normal rotation.

(6) Install the rotor assembly and stator assembly.

(7) Clean the upper and lower drum assemblies and perform the following adjustments;
- PB switching point adjustment
- Slow tracking preset adjustment
- Interchangeability adjustment (be sure to check LP mode)

2.6 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

2.6.1 Precaution

The rotary encoder and syscon circuit are closely interrelated.Therefore,the rotary encoder and control cam conection determines the operations of mechanical parts such as plates,gears,brakes,etc.Correct positioning of these parts is essential for smooth tape loading and mechanical operations.

2.6.2 Loadidg Arm Assembly (supply,take-up)

(1) Install the supply loading arm assembly and the take-up loading arm assembly so that their positioning markings on the respective gear face each other and the holes of their arms correspond to the holes on the main deck assembly respectively.

(2) After setting the guide rails,engage the pole base assemblies with the tip of the loading arms respectively. Then,enter the mechanism into the unloading mode to return the pole base assemblies to the front position.

(3) Reassemble the peripheral parts of the guide rail to its original position.

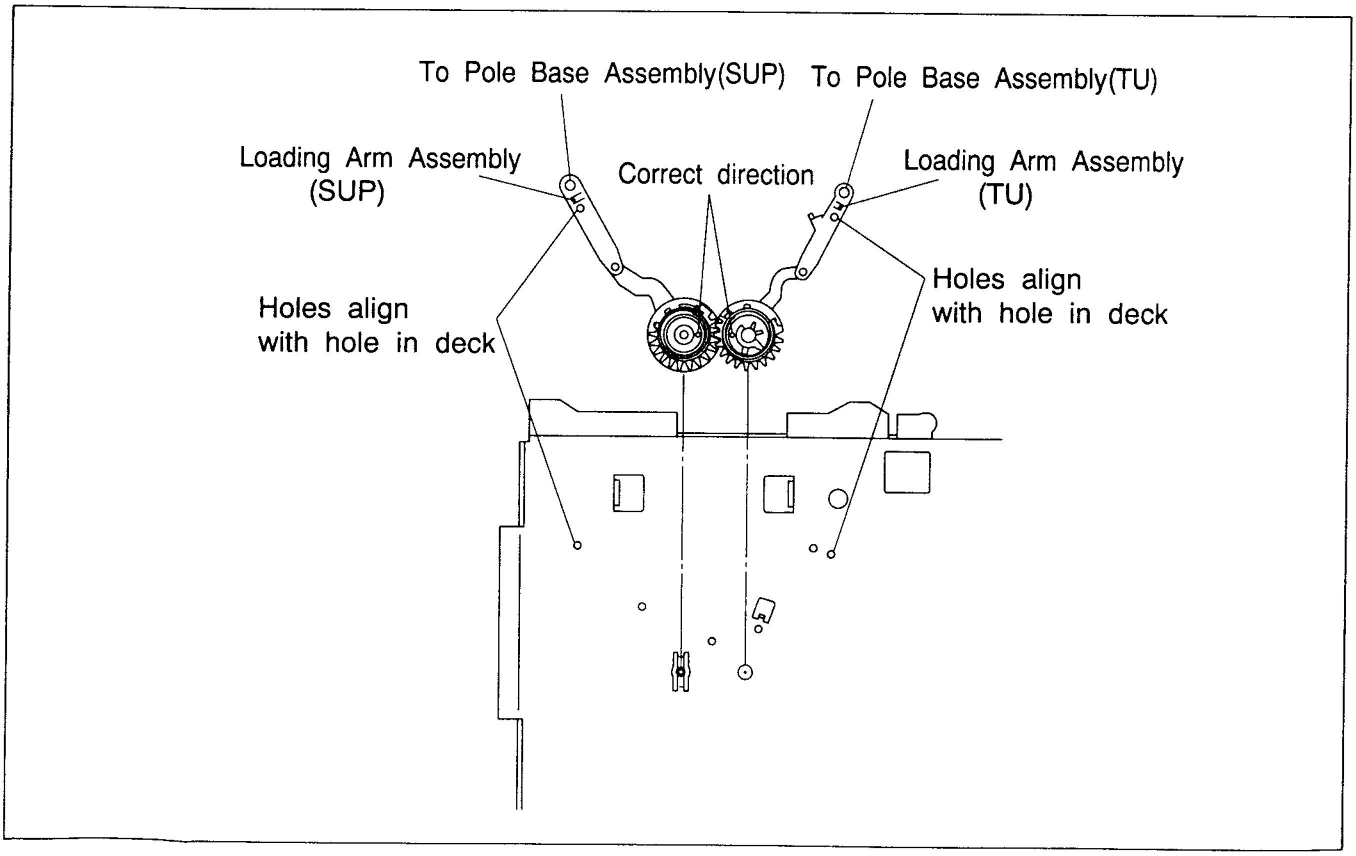

To Pole Base Assembly(SUP)
To Pole Base Assembly(TU)
Loading Arm Assembly (SUP)
Correct direction
Loading Arm Assembly (TU)
Holes align with hole in deck
Holes align with hole in deck

Fig. 2-6-1

2.6.3 Rotary Encoder,Change Lever,Control Cam

(1) When reinstalling the rotary encoder,adjust its position so as to fit the triangle marks each other and push it deep untill it is locked by the pawls.

(2) When reinstalling the change lever,set it so as to make its positioning hole correspond to the hole of the main deck assembly.

(3) When re-engaging the control cam,lower the capstan brake assembly while setting it so as to make its positioning hole correspond to the hole of the main deck assembly.

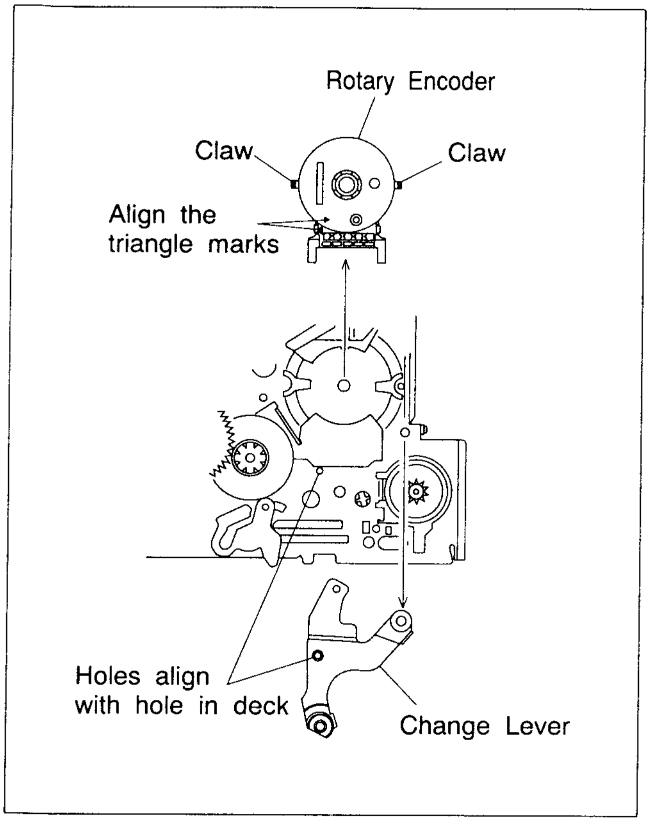

Rotary Encoder
Claw
Claw
Align the triangle marks
Holes align with hole in deck
Change Lever

Fig. 2-6-2

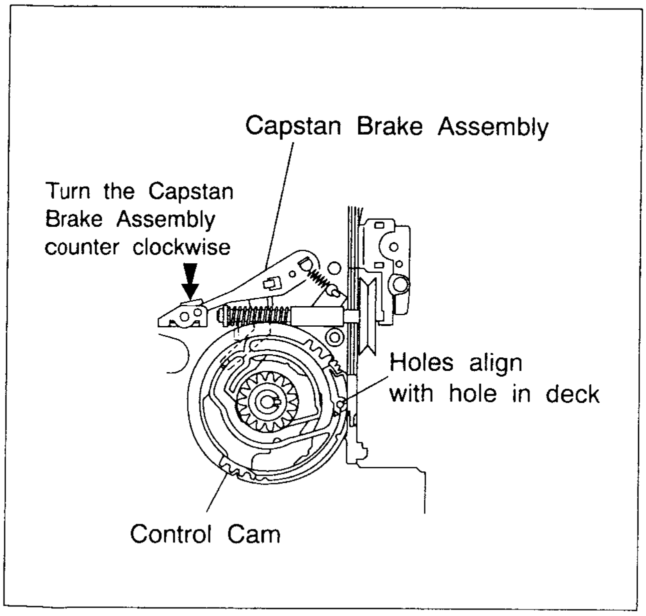

Capstan Brake Assembly
Turn the Capstan Brake Assembly counter clockwise
Holes align with hole in deck
Control Cam

Fig. 2-6-3

2.6.4 Slide Plate

(1) Lower both the main brake assemblies (supply and take-up) untill they touch the edge of the main deck assembly while reinstalling the slide plate so as to make the respective positioning holes of the main brake assemblies correspond to the holes on the main deck assembly.

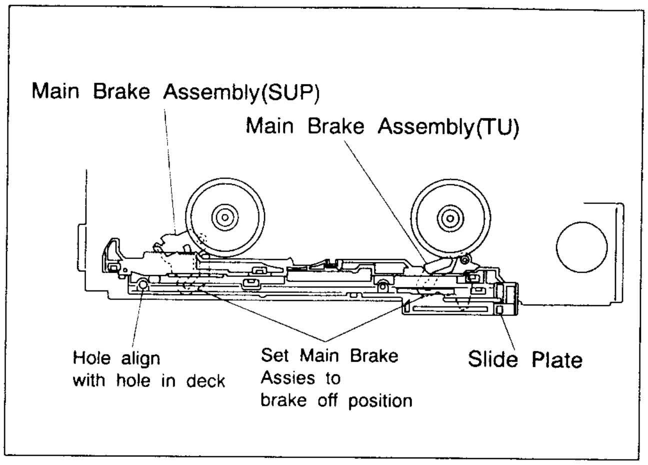

Main Brake Assembly(SUP)
Main Brake Assembly(TU)
Hole align with hole in deck
Set Main Brake Assies to brake off position
Slide Plate

Fig.2-6-4

2.6.5 Control Plate

(1) Reinstall the control plate so as to set the two positioning holes of it on the holes on the main deck assembly respectively and to set the positioning hole of the take-up lever on the hole of the main deck at the same time. When adjusting the hole position of the take-up lever,use a pair of tweezers to hold and move it since it is pulled by a tension spring.

(2) After reinstalling the control plate,fix it with the slit washer,control bracket-1 and -2.

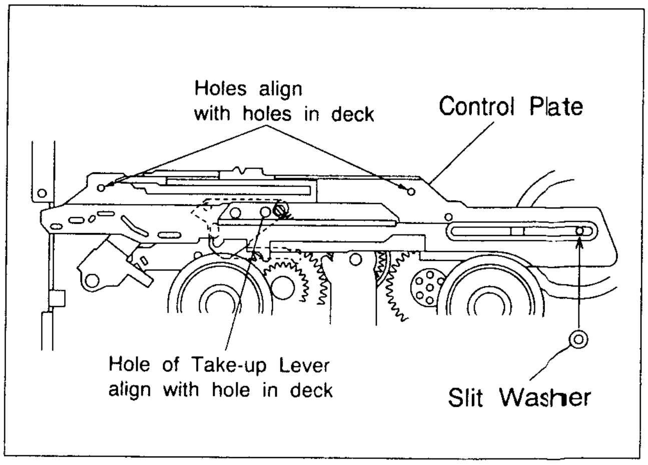

Holes align with holes in deck
Control Plate
Hole of Take-up Lever align with hole in deck
Slit Washer

Fig. 2-6-5

2.7 TAPE INTERCHANGEABILITY ADJUSTMENT

NOTE :
- *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components(A/C head,upper/lower drum assembly,pole base assy,etc).*
- *Before using costly alignment tape,use a spare tape and confirm correct operation of the tape transport.*

2.7.1 Tape pattern

(1) Connect the oscilloscope to TP106(PB FM) on the PRE/REC board.Use TP111(D.FF) on the PRE/REC board as a trigger.

(2) Playback the SP stairstep portion of the alignment tape [MHPE].Confirm that the FM waveform appears as indicated in Fig.2-7-1.

(3) Set the manual tracking position by pressing the ***///*** button on the remote controller or TV PROG "-" and "+" buttons simultaneously.

(4) Operate the tracking adjustment (press the TV PROG buttons during playback) and set for maximum playback FM waveform.

(5) By operating the TV PROG button,vary the FM waveform from maximum to minimum and vice versa to confirm that the waveform varies nearly in a flat shape as shown in Fig.2-7-1.

(6) When the FM waveform does not remain flat during this process,first slightly loosen the set screw located at the bottom of the guide rollers.Using the guide roller adjustment tool (Roller driver) ,adjust the supply and take-up guide rollers (refer to Fig.2-7-2) to obtain the correct waveform as indicated in Fig.2-7-3.

(7) By pressing the TV PROG buttons several times,vary the FM waveform output from maximum to minimum (and vice versa) gradually,and confirm that the variation proceeds in flat shape, as shown in Fig.2-7-3.

(8) Record the signal and play it back in the SP mode,confirm that the FM waveform is flat in SP mode.

(9) After adjustments,tighten the set screw of the guide rollers.

(10) Confirm that the tape wrinking does not occur at the roller upper or lower limits as indicated in Fig.2-7-4.

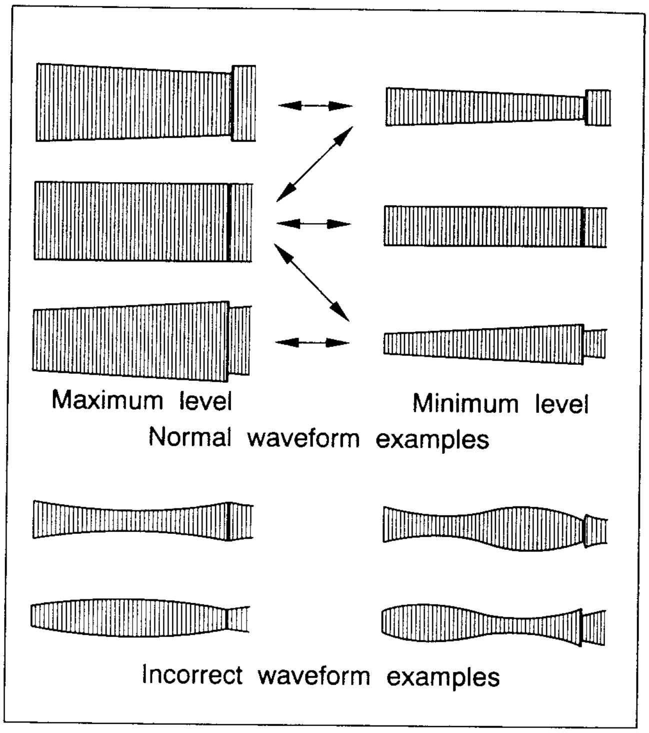


Fig. 2-7-1

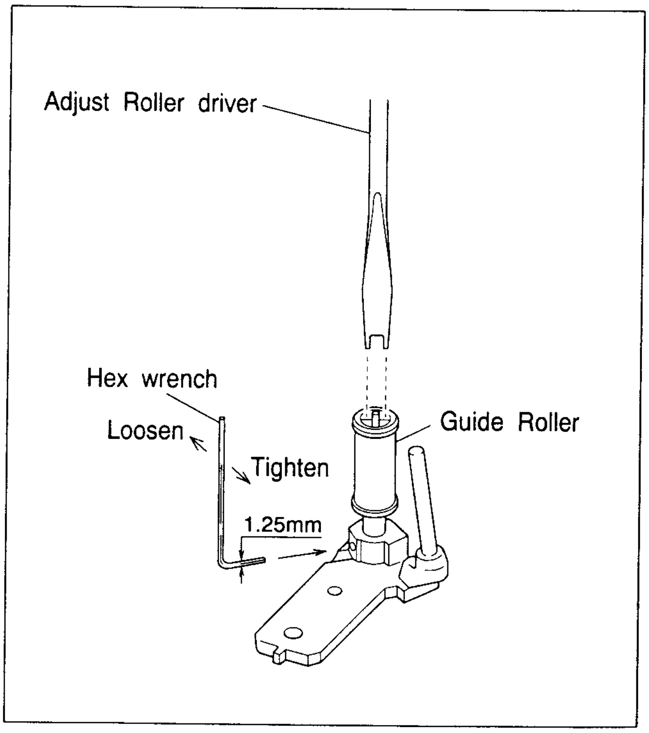


Fig. 2-7-2

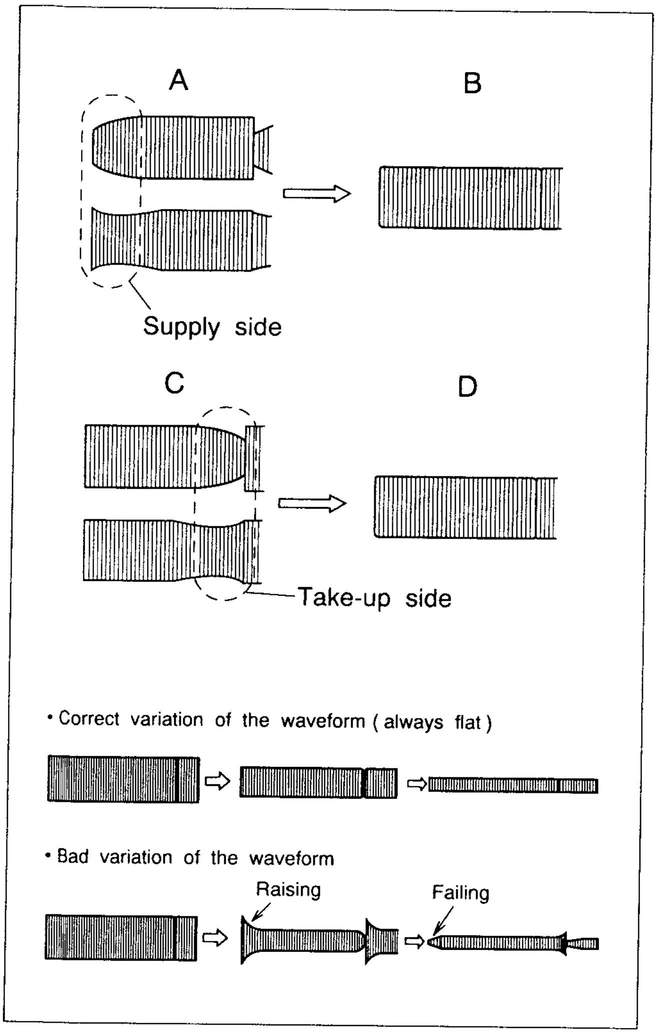

A
B
Supply side
C
D
Take-up side
• Correct variation of the waveform (always flat)
• Bad variation of the waveform
Raising
Failing

Fig. 2-7-3

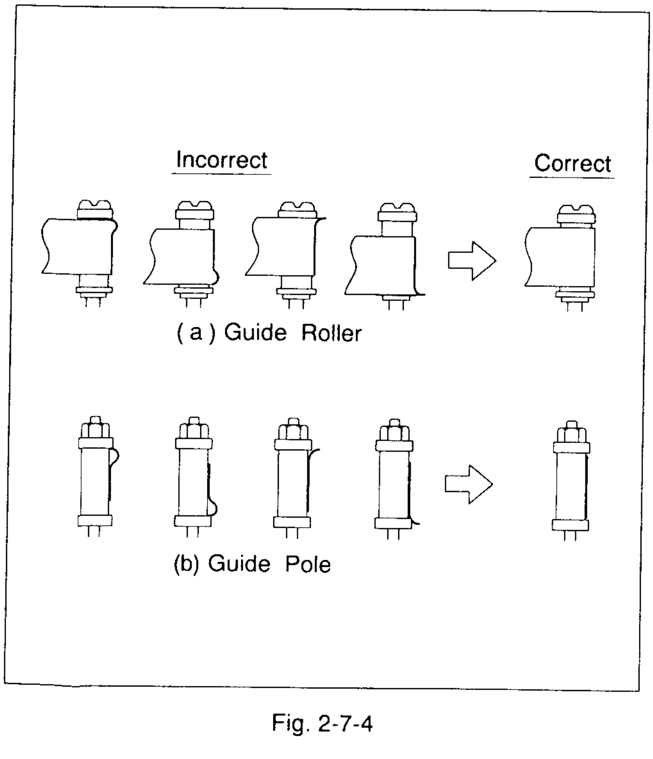

Incorrect
Correct
(a) Guide Roller
(b) Guide Pole

Fig. 2-7-4

2.7.2 A/C head height & azimuth

NOTE :
- *Temporarily set A/C head height as indicated in Fig. 2-5-4.*
- *Use spare tape to check the transport and confirm the tape is not scratched or damaged.*

1. Tilt

(1) Use spare tape and set for playback.
(2) Turn screw (3) clockwise to where the tape curls just slightly at the TU guide pole bottom flange as shown in Fig.2-7-5.
(3) Then slowly turn screw (3) counterclockwise to where the curling ceases.

2. Height

(1) Connect CH-1 of a dual trace oscilloscope to Audio Out.
(2) Connect CH-2 to TP1101(CTL PULSE) of the Main board assembly and use the ALT mode.
(3) Playback the SP stairstep portion of the alignment tape [MHPE].
(4) Adjust screws (1),(2) and (3) for maximum audio output and control pulse level.

3. Azimuth

(1) Connect the oscilloscope to Audio Out.
(2) Playback the SP stairstep portion of the alignment tape [MHPE].
(3) Adjust screw (2) so that the audio output is both maximum and with minimum fluctuation.

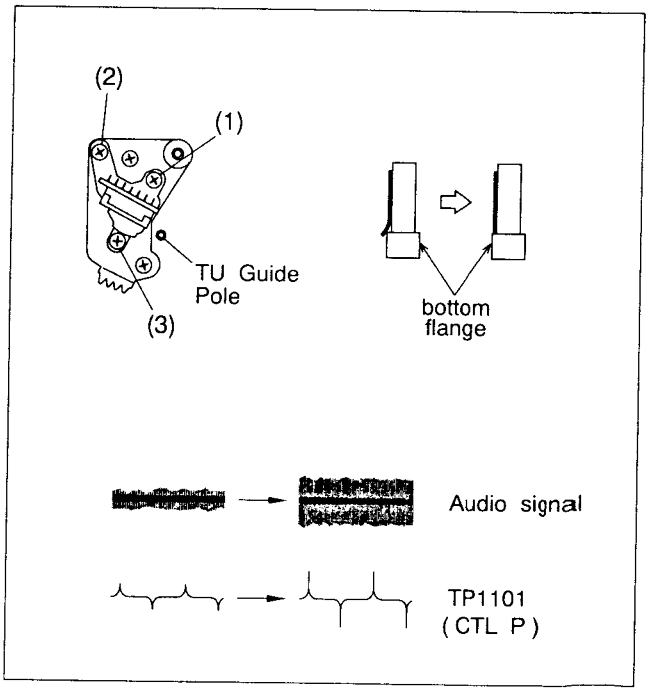

(2)
(1)
TU Guide Pole
(3)
bottom flange
Audio signal
TP1101 (CTL P)

Fig. 2-7-5

2.7.3 A/C head phase(X-value)

(1) Connect the oscilloscope to TP106(PB FM) on the PRE/REC board.Use TP111(D.FF) on the PRE/REC board as a trigger.
(2) Playback the SP stairstep portion of the alignment tape [MHPE].
(3) Set the neutral manual tracking position by pressing the **///** button on the remote controller or TV PROG "-" and "+" buttons simultaneously.
(4) If adjustment is required,slightly loosen screws (4) and (5). Set A/C head positioning tool on the A/C head adjusting boss as indicated in Fig.2-7-6.
(5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig.2-7-7.
(6) Tighten screw (5). Remove the tool and tighten screw (4).

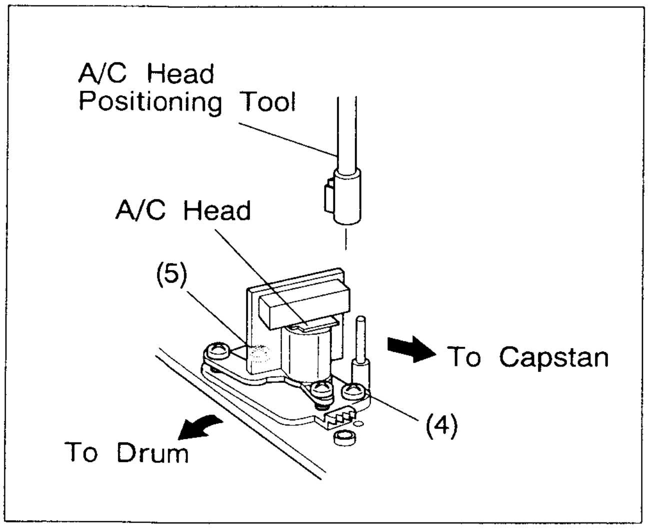


Fig. 2-7-6

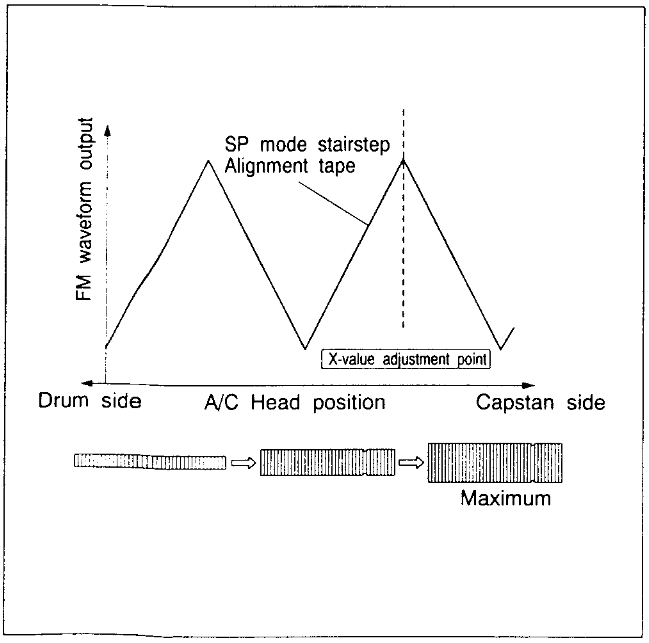


Fig. 2-7-7

2.7.4 Tension pole position

(1) Set for playback mode using MECHANISM SERVICE MODE(See SECTION 1 DISASSEMBLY).
(2) Slightly loosen the screw (A) .
(3) Turn the adjust pin so that the tension arm assembly does not touch ϕ2.5 pole on the outside.
(4) Tighten the screw (A).
(5) After adjustment,use the back tension cassette gauge and set for the playback mode.
(6) Confirm reading of 29 to 46 g•cm.

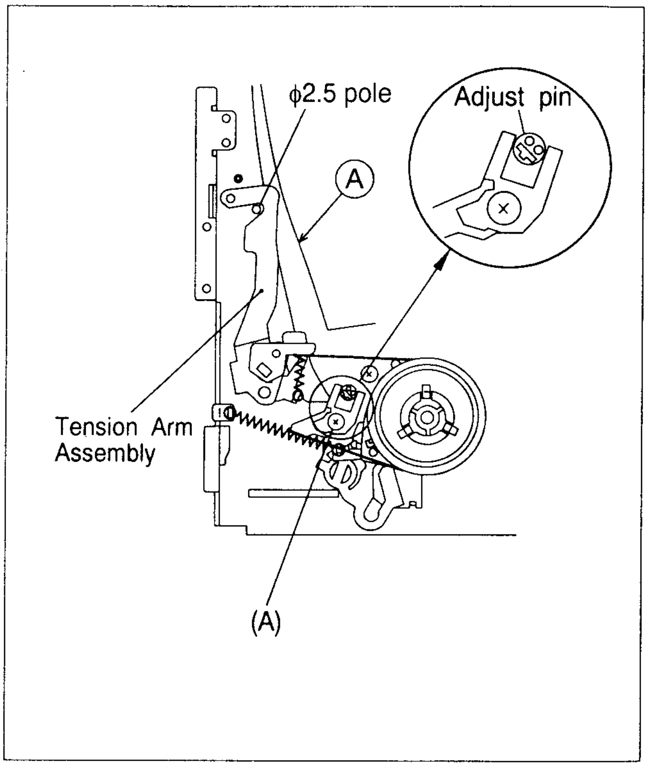


Fig. 2-7-8

2.7.5 Take-up torque

(1) Use the back tension cassette gauge and set for the playback mode.
(2) Confirm reading of 60 to 100 g•cm.

SECTION 3
ELECTRICAL ADJUSTMENT

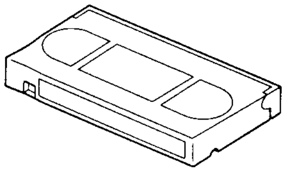
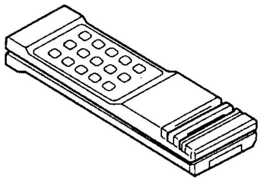
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is available.

3.1.1 Required test equipment

① Colour television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Digital voltmeter
⑤ Signal generator: RF/IF sweep/marker
⑥ Signal generator: PAL colour bar, stairstep
⑦ Recording tape
⑧ Numeric-key remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP,stairstep) MHPE	Presetting unit PTU940008
	

3.1.3 Colour bar signal,colour bar pattern

- Colour bar signal

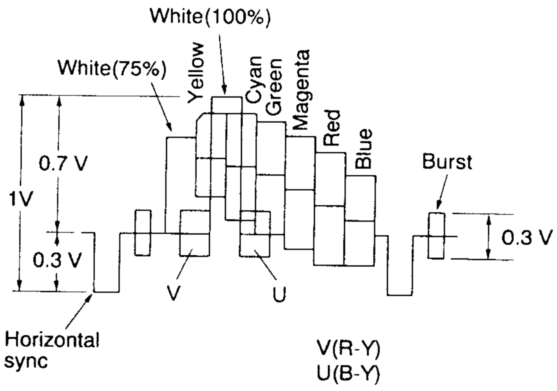

White(100%)
White(75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1V
0.3 V
0.3 V
V
U
Horizontal sync
V(R-Y)
U(B-Y)

Fig.3-1-1 Colour bar signal waveform

- Colour bar pattern

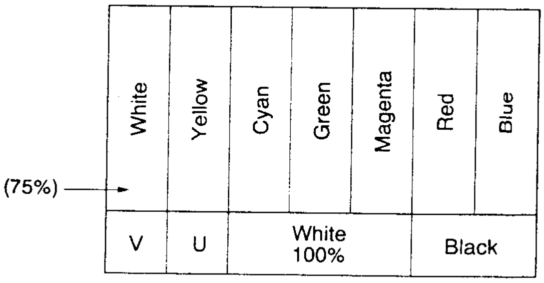

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White 100%
Black

Fig.3-1-2 Colour bar pattern

3.2 SERVO CIRCUIT

Notes:
- *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
- *Set VCR to the mode A by remote controller.*
- *Use only buttons "O", depressing other buttons during adjustment may cause adjustment errors.*

3.2.1 PB switching point

Signal	• Alignment tape [MHPE],Stairstep
Mode	• PB
Equipment	• Oscilloscope
Measurement point	• J1411- pin 19 (VIDEO OUT) [TERMINAL BOARD]
Trigger slope (-)	• TP111(DRUM FF) , [PRE/REC BOARD]
Adjustment tool	• Presetting unit [PTU94008]
Specification	• 6.5 ± 0.5H

(1) Connect an oscilloscope to J1411- pin 19 (VIDEO OUT) and external trigger from TP111 (negative slope).
(2) Playback the stairstep signal of the alignment tape.
(3) Press the "O" button of the presetting unit.
(4) Confirm that VCR mode becomes STOP mode.

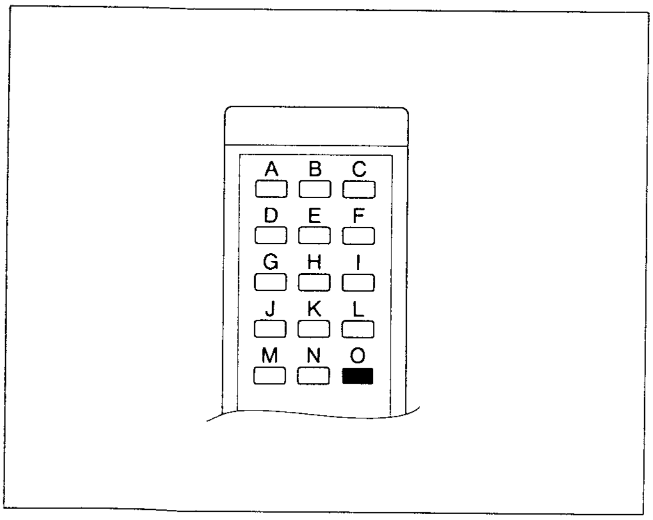


Fig.3-2-1 Presetting unit

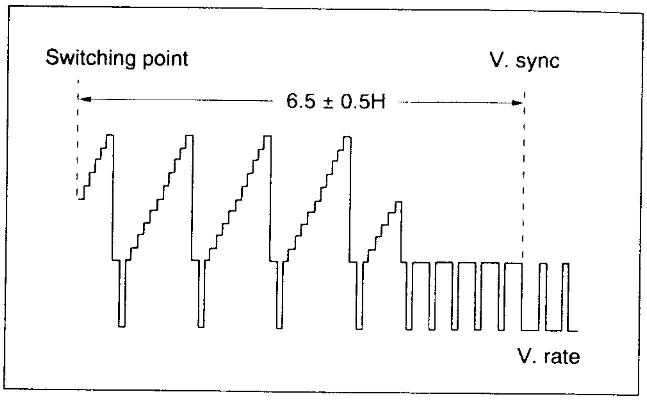


Fig.3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Tuner or colour bar
Mode	•SP, REC → PB(SLOW)
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit [PTU94008]
Specification	• Minimum noise

Note : *Set VCR to the mode A by remote controller. Use only buttons "B" and "C", depressing other buttons during adjustment may cause adjustment errors.*

(1) Record a colour bar signal in the SP mode.
(2) Playback recorded signal on the FWD slow mode.
(3) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing "B " or "C " buttons of the presetting unit.
(4) Depress the STOP button.
(5) Confirm that the bar noise is not visible on the TV monitor in the slow mode.

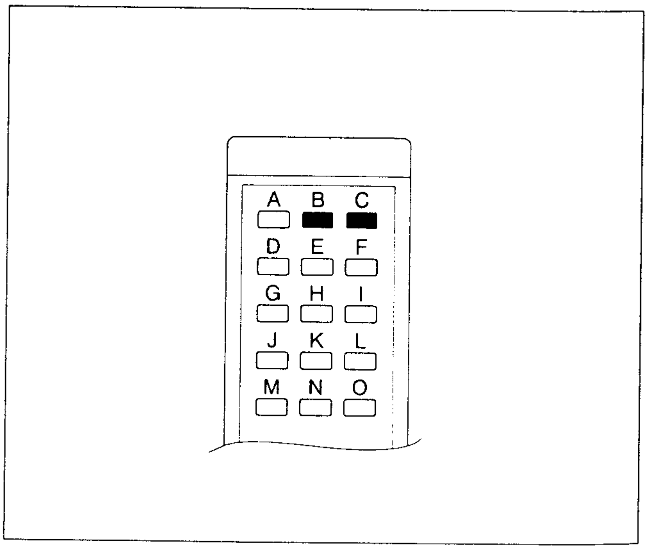


Fig.3-2-3 Presetting unit

3.3 VIDEO CIRCUIT

Notes:
- *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
- *Set VCR to the mode A by remote controller.*

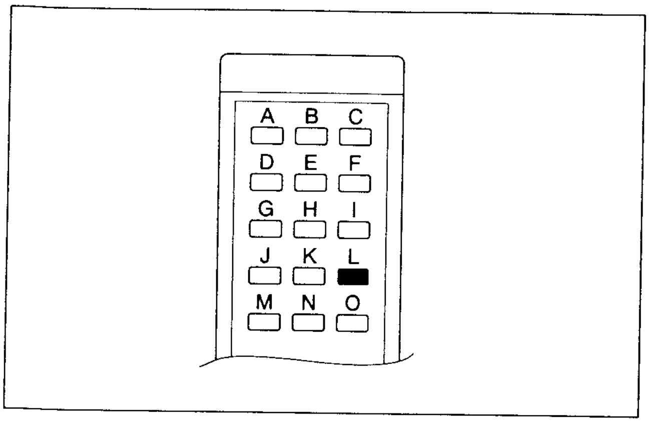


Fig.3-3-1 Presetting unit

3.3.1 Auto picture

Signal	• Monoscope
Mode	• REC then PB • SP
Adjustment tool	• Presetting unit[PTU94008]
Specification	• STOP mode

(1) Record a monoscope signal in the SP mode.
(2) Playback the recorded signal.
(3) Press the "L" button of the presetting unit during playback.
(4) Confirm that VCR will go into the STOP mode.

3.4 SYSCON CIRCUIT

Notes:
- *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
- *When perform this adjustment,remove the MECHANISM assembly.*

3.4.1 Timer clock

Signal	• No signal
Mode	• EE
Equipment	• Frequency counter
Measurement point	• TP702 round(SYS.CLK)
Adjustment part	• C701 (TIMER CLOCK)
Specification	• 1024.008 ± 0.001 Hz [976.5549 ± 0.0010 usec]

(1) Connect the frequency counter to TP702 round and GND.
(2) Connect the short wire between TP701 round and Vcc(5V).
(3) Short the leads of capacitor C704 once in order to reset IC701.
(4) Disconnect the short wire then connect it again quickly.
(5) Adjust C701 for 1024.008 ± 0.001 Hz.
(976.5549 ± 0.0010 usec)

3.5 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT.*

3.5.1 RF AGC

Signal	• TV broadcasting
Mode	• Tuner
Equipment	• TV monitor
Measurement point	• IF UNIT
Adjustment part	•IF VR
Specification	• Minimum noise

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

(1) Adjust IF VR to minimize noise or streaks on the TV screen.
(2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

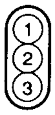
1) All resistance values are in ohm. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or IN4148M (refer to parts list).

2. Indications of control voltage

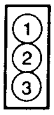
AUX : Active only at high.
$\overline{\text{AUX}}$ or AUX(L) : Active at low.

3. Interpreting Connector indications

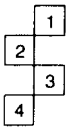
Removable connector



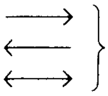
Wire soldered directly on board



Non-removable Board connector



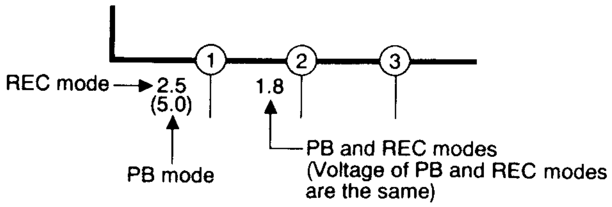
Board to Board



Connected pattern on board

4. Voltage measurement

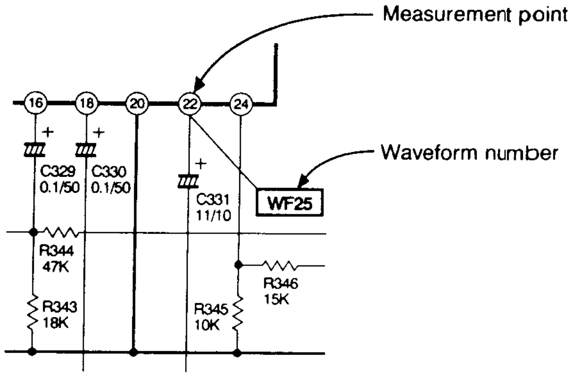
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio circuis
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.


1
2
3
REC mode
2.5
(5.0)
1.8
PB mode
PB and REC modes
(Voltage of PB and REC modes are the same)

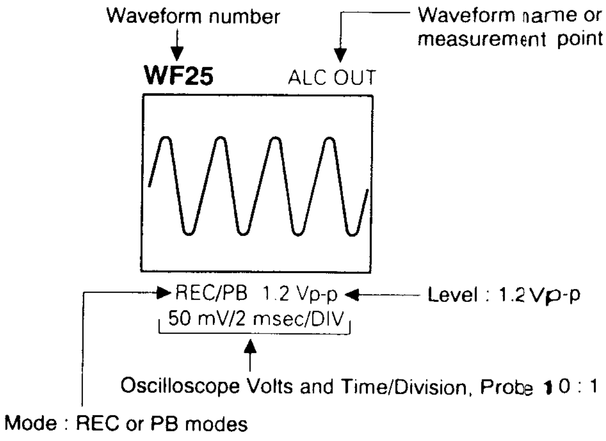
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test chatrs in the E-E mode.
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.


Measurement point
16
18
20
22
24
C329
0.1/50
C330
0.1/50
C331
11/10
WF25
Waveform number
R344
47K
R343
18K
R345
10K
R346
15K

5) Waveform indications


Waveform number
Waveform name or measurement point
WF25
ALC OUT
REC/PB 1.2 Vp-p
50 mV/2 msec/DIV
Level : 1.2Vp-p
Oscilloscope Volts and Time/Division, Probe 10 : 1
Mode : REC or PB modes

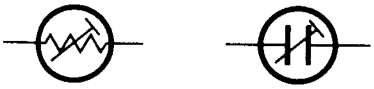
6. Signal path Symbols

The arrows indicate the signal path as follows.

⇨	Playback signal path
▭▶	Playback and recording signal path
➡	Recording signal path (including E-E signal path)
■▷	Y signal path
⇨▷	Colour (Chroma) signal path
▭▶▷	R or R-Y signal path
➡▷	B or B-Y signal path
⇨▶	Capstan servo path
▭▶▶	Drum servo path
➡▶	Reel servo path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

Or the symbol number is struck off by two lines as below.

~~R216~~

10K

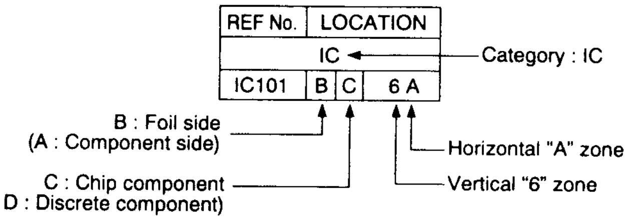
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

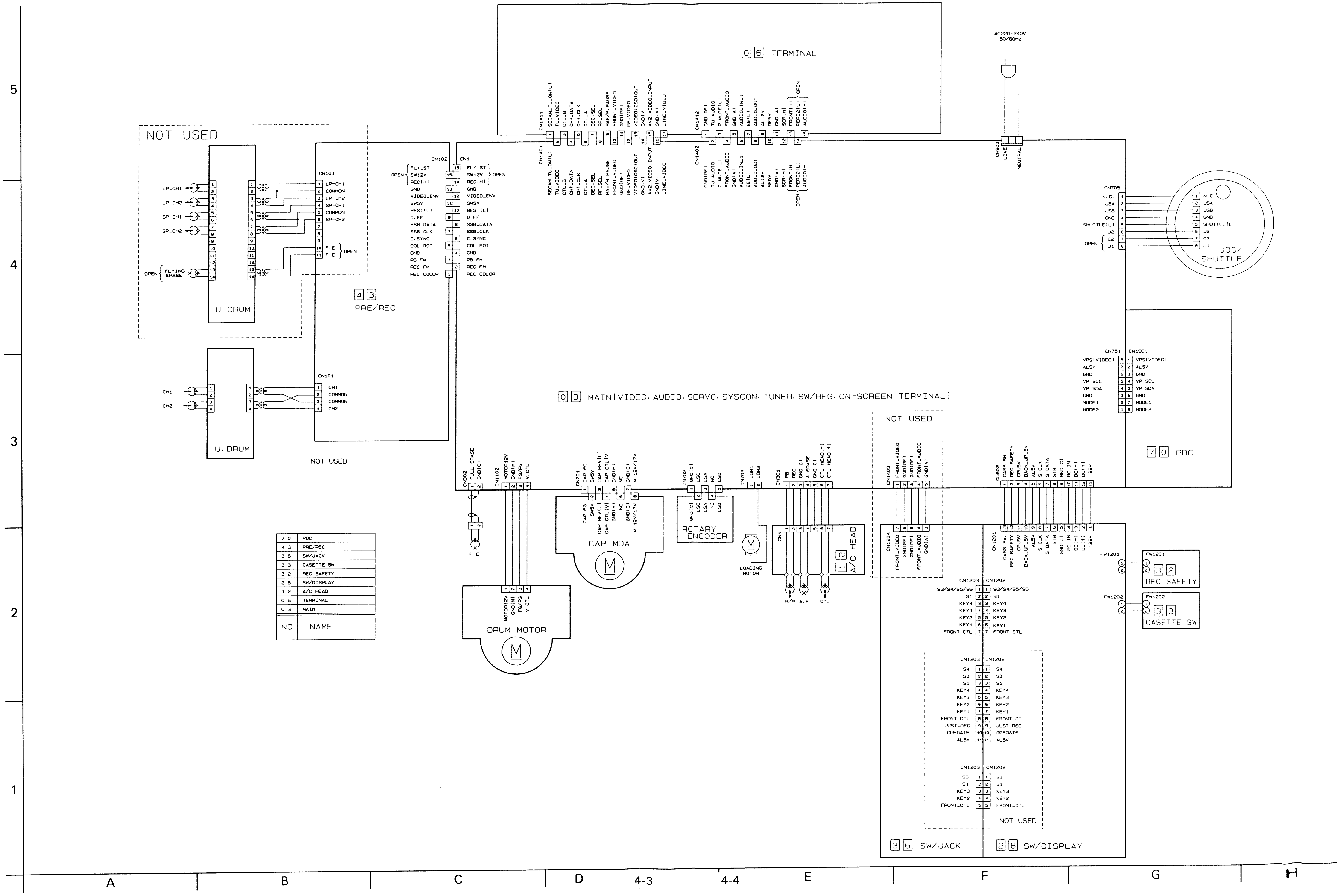
Parts location are indicated by guide scale on the circuit board.


REF No.
LOCATION
IC
Category : IC
IC101
B
C
6 A
B : Foil side
(A : Component side)
C : Chip component
D : Discrete component)
Horizontal "A" zone
Vertical "6" zone

Notes:

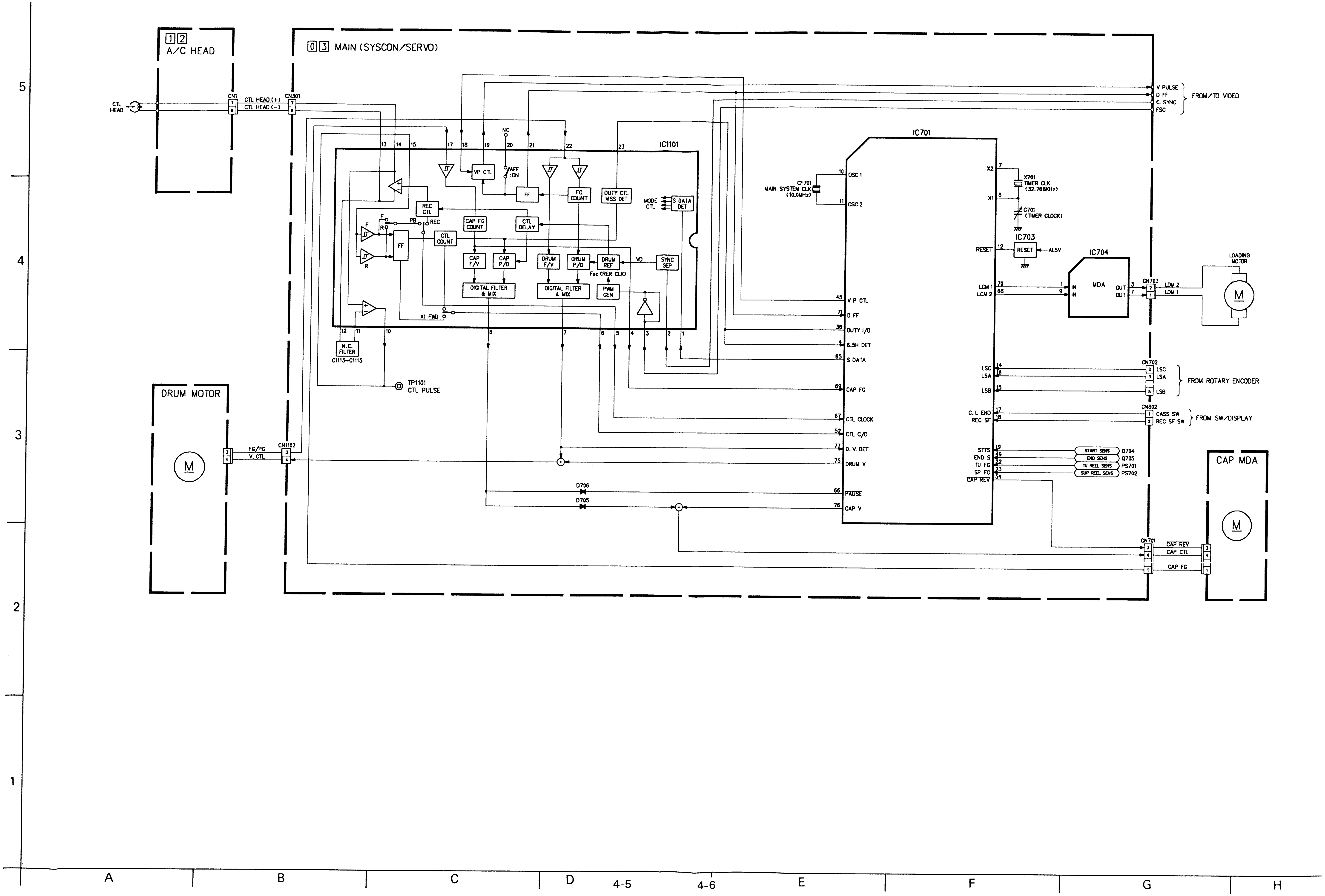
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

4.1 BOARD INTERCONNECTIONS


0 6 TERMINAL
CN1411
SECAM_TU_ON(L)
TU_VIDEO
CTL_B
CH+_DATA
CH+_CLK
CTL_A
DEC_SEL
RF_SEL
RAE/R. PAUSE
FRONT_VIDEO
GND(RF)
RF_VIDEO
VIDEO(OSD)OUT
GND(V)
AV2_VIDEO_INPUT
GND(V)
LINE_VIDEO
CN1401
CN1412
GND(RF)
TU_AUDIO
P_MUTE(L)
FRONT_AUDIO
GND(A)
AUDIO_IN_1
EE(L)
AUDIO_OUT
AL12V
RF5V
GND(A)
SCR(H)
FRONT(H)
PERI2(L)
AUDIO(-)
OPEN
CN1402
AC220-240V 50/60Hz
CN901
LIVE
NEUTRAL
NOT USED
U. DRUM
LP_CH1
LP_CH2
SP_CH1
SP_CH2
OPEN
FLYING ERASE
CN101
LP-CH1
COMMON
LP-CH2
SP-CH1
COMMON
SP-CH2
F.E.
F.E.
OPEN
CN102
CN1
FLY_ST
SW12V
REC(H)
GND
VIDEO_ENV
SW5V
BEST(L)
D.FF
SSB_DATA
SSB_CLK
C.SYNC
COL ROT
GND
PB FM
REC FM
REC COLOR
4 3 PRE/REC
CN101
CH1
COMMON
COMMON
CH2
CH1
CH2
U. DRUM
NOT USED
CN705
N.C.
JSA
JSB
GND
SHUTTLE(L)
J2
C2
J1
OPEN
JOG/ SHUTTLE
CN751
CN1901
VPS(VIDEO)
AL5V
GND
VP SCL
VP SDA
GND
MODE1
MODE2
7 0 PDC
0 3 MAIN(VIDEO. AUDIO. SERVO. SYSCON. TUNER. SW/REG. ON-SCREEN. TERMINAL)
CN302
FULL ERASE
GND(C)
F.E
CN1102
MOTOR12V
GND(M)
FG/PG
V.CTL
DRUM MOTOR
M
CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(V)
GND(M)
NC
GND(C)
M 12V/17V
CAP MDA
M
CN702
GND(C)
LSC
LSA
NC
LSB
ROTARY ENCODER
CN703
LDM1
LDM2
M
LOADING MOTOR
CN301
PB
REC
GND(C)
A.ERASE
GND(C)
CTL HEAD(-)
CTL HEAD(+)
CN1
1 2 A/C HEAD
R/P
A.E
CTL
NOT USED
CN1403
FRONT_VIDEO
GND(RF)
GND(RF)
FRONT_AUDIO
GND(A)
CN1204
CN802
CASS SW.
REC SAFETY
CPU5V
BACK_UP_5V
AL5V
S CLK
S DATA
STB
GND(C)
RC_IN
DC(-)
DC(+)
-28V
CN1201
FW1201
3 2 REC SAFETY
FW1202
3 3 CASETTE SW
CN1203
CN1202
S3/S4/S5/S6
S1
KEY4
KEY3
KEY2
KEY1
FRONT CTL
S4
S3
S1
KEY4
KEY3
KEY2
KEY1
FRONT_CTL
JUST_REC
OPERATE
AL5V
S3
S1
KEY3
KEY2
FRONT_CTL
NOT USED
3 6 SW/JACK
2 8 SW/DISPLAY
5
4
3
2
1
A
B
C
D
E
F
G
H

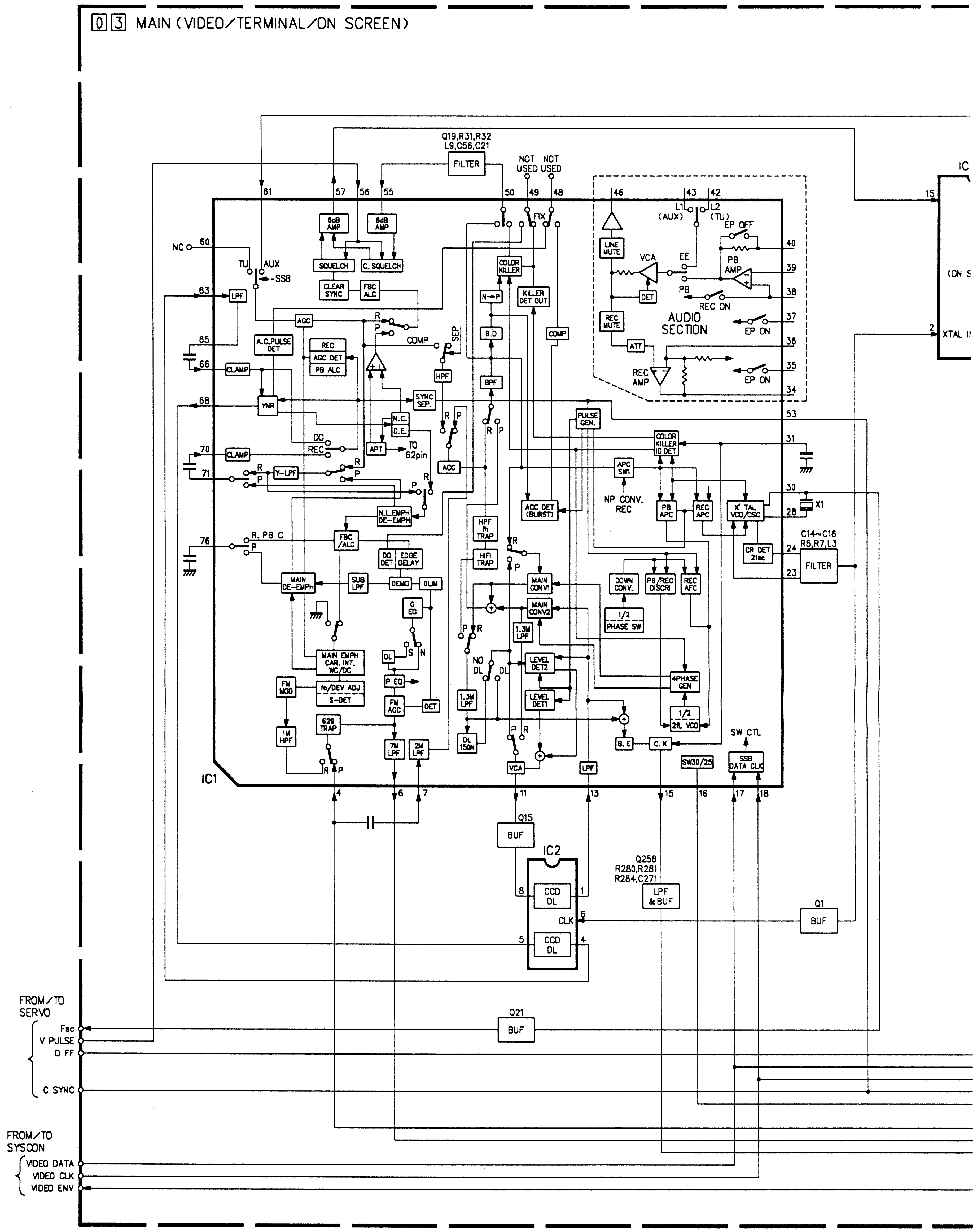
NO	NAME
7 0	PDC
4 3	PRE/REC
3 6	SW/JACK
3 3	CASETTE SW
3 2	REC SAFETY
2 8	SW/DISPLAY
1 2	A/C HEAD
0 6	TERMINAL
0 3	MAIN

4.2 SYSTEM CONTROL BLOCK DIAGRAM

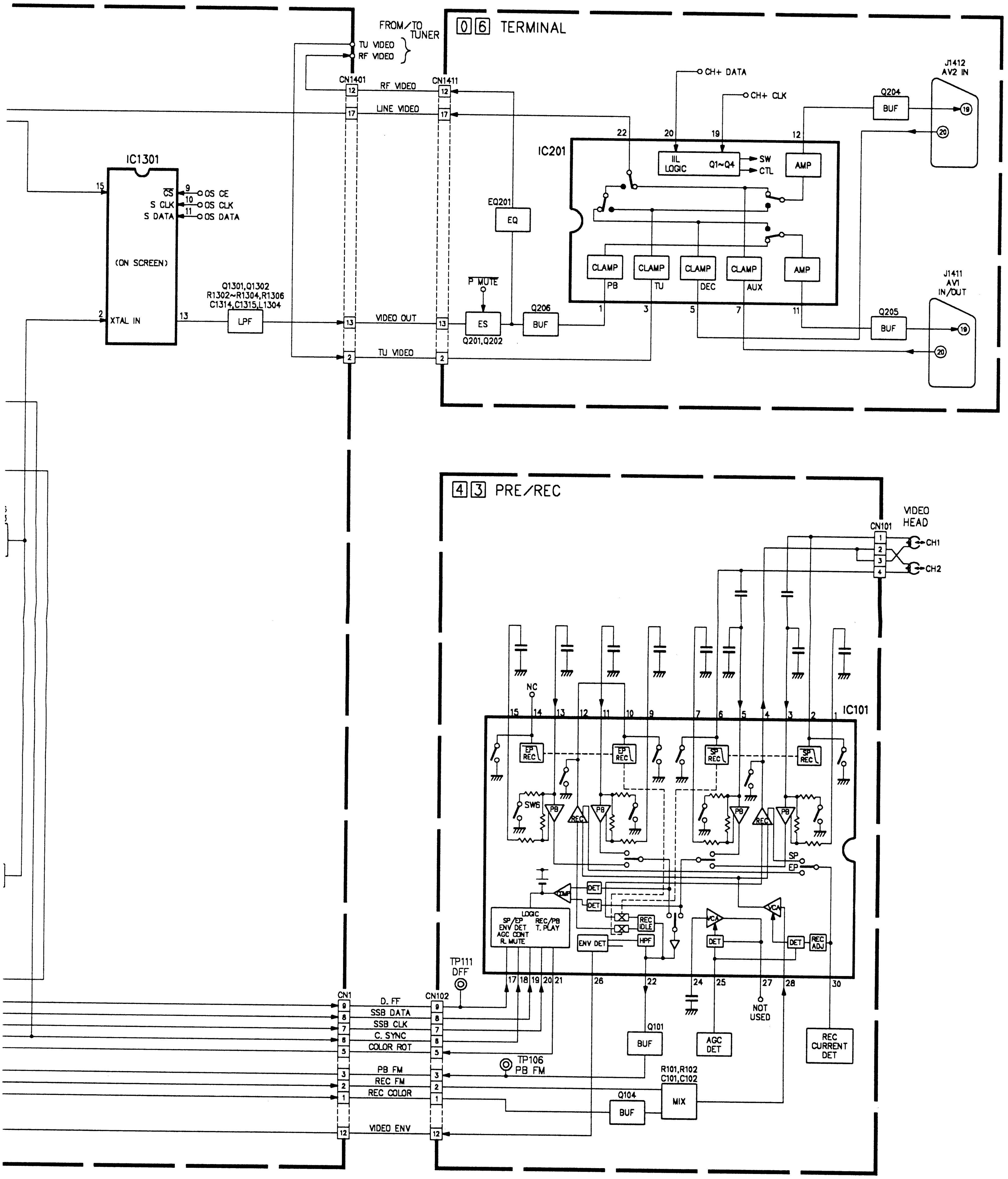


1 2 A/C HEAD
CTL HEAD
CN1
CTL HEAD (+)
CTL HEAD (−)
CN301
0 3 MAIN (SYSCON/SERVO)
IC1101
NC
AFF :ON
VP CTL
FF
FG COUNT
DUTY CTL VISS DET
MODE CTL
S DATA DET
REC CTL
F
R
PB
REC
CAP FG COUNT
CTL DELAY
CTL COUNT
CAP F/V
CAP P/D
DRUM F/V
DRUM P/D
DRUM REF
VD
SYNC SEP
Fsc (RER CLK)
DIGITAL FILTER & MIX
DIGITAL FILTER & MIX
PWM GEN
X1 FWD
N.C. FILTER
C1113~C1115
TP1101 CTL PULSE
DRUM MOTOR
M
FG/PG
V. CTL
CN1102
D706
D705
IC701
CF701 MAIN SYSTEM CLK (10.0MHz)
OSC 1
OSC 2
V P CTL
D FF
DUTY I/O
6.5H DET
S DATA
CAP FG
CTL CLOCK
CTL C/D
D. V. DET
DRUM V
PAUSE
CAP V
X2
X1
X701 TIMER CLK (32.768KHz)
C701 (TIMER CLOCK)
IC703
RESET
RESET
AL5V
IC704
MDA
LCM 1
LCM 2
IN
IN
OUT
OUT
CN703
LDM 2
LDM 1
LOADING MOTOR
M
V PULSE
D FF
C. SYNC
FSC
FROM/TO VIDEO
LSC
LSA
LSB
CN702
FROM ROTARY ENCODER
C. L END
REC SF
CN802
CASS SW
REC SF SW
FROM SW/DISPLAY
STTS
END S
TU FG
SP FG
CAP REV
START SENS
END SENS
TU REEL SENS
SUP REEL SENS
Q704
Q705
PS701
PS702
CAP MDA
M
CN701
CAP REV
CAP CTL
CAP FG
5
4
3
2
1
A
B
C
D
E
F
G
H

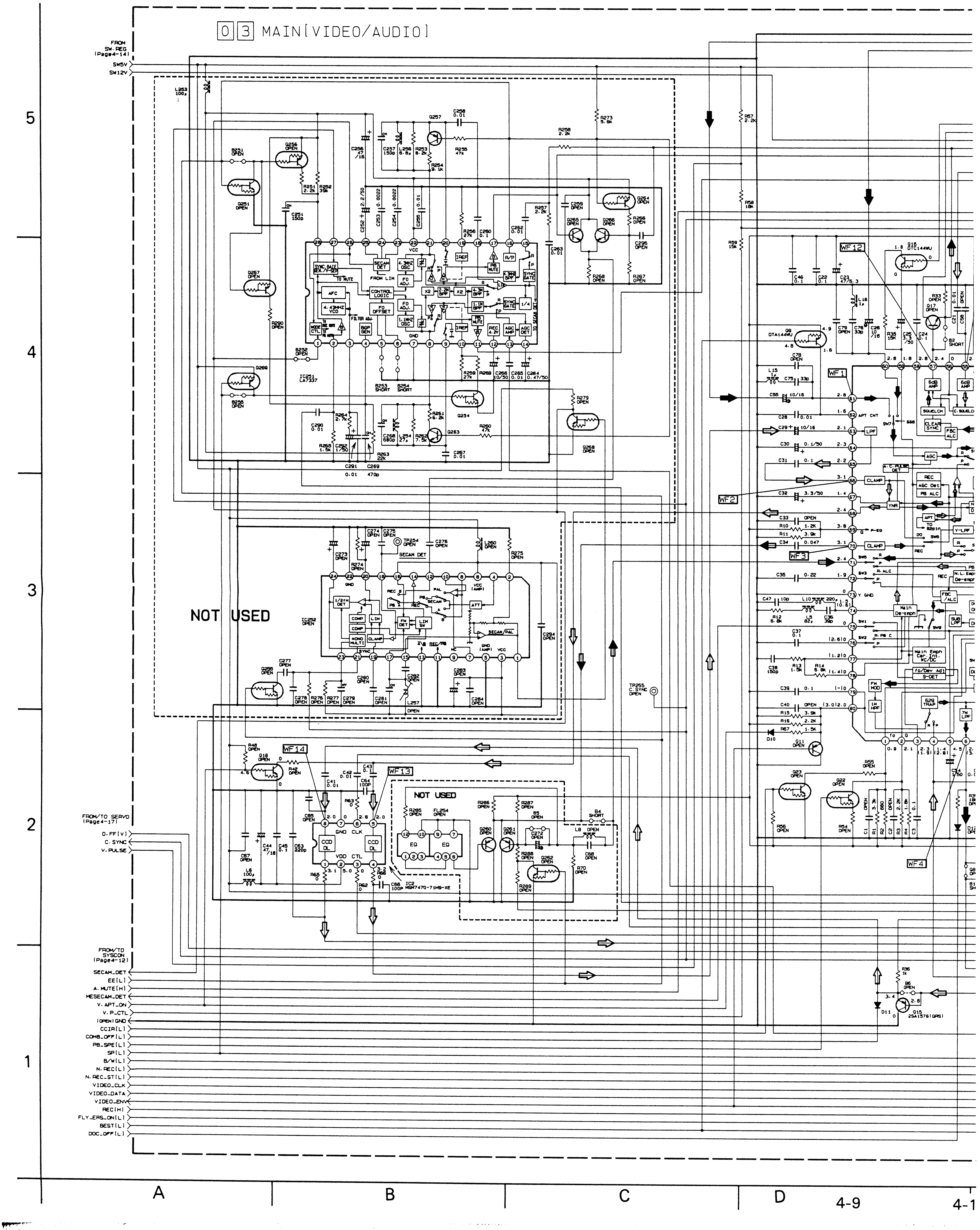
4.3 VIDEO BLOCK DIAGRAM

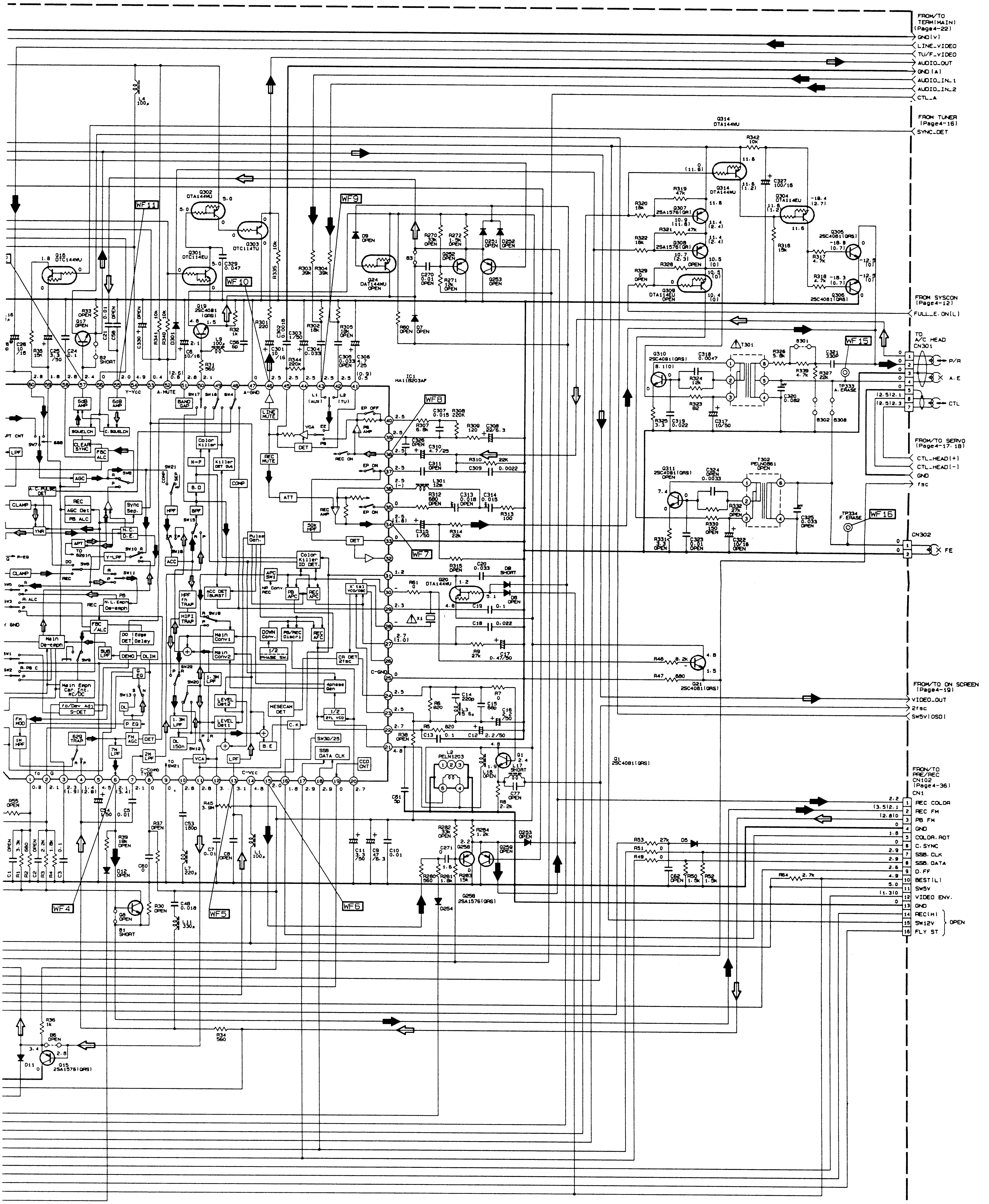


03 MAIN (VIDEO/TERMINAL/ON SCREEN)
Q19,R31,R32
L9,C56,C21
FILTER
NOT USED
NOT USED
IC
ON S
XTAL II
NC
TU
AUX
SSB
LPF
CLAMP
A.C.PULSE DET
AGC
YNR
Y-LPF
6dB AMP
SQUELCH
C. SQUELCH
CLEAR SYNC
FBC ALC
REC
AGC DET
PB ALC
COMP
SEP
HPF
SYNC SEP.
N.C.
D.E.
APT
TO 62pin
DO
REC
ACC
N.L.EMPH
DE-EMPH
R. PB C
FBC /ALC
DO DET
EDGE DELAY
MAIN DE-EMPH
SUB LPF
DEMO
DLIM
G EG
MAIN EMPH
CAR. INT.
WC/DC
fo/DEV ADJ
S-DET
FM MOD
1M HPF
629 TRAP
DL
P EQ
FM AGC
DET
7M LPF
2M LPF
COLOR KILLER
N→P
B.D
BPF
KILLER DET OUT
COMP
FIX
HPF fh TRAP
HIFI TRAP
MAIN CONV1
MAIN CONV2
1.3M LPF
NO DL
LEVEL DET2
LEVEL DET1
1.3M LPF
DL 150N
VCA
LPF
ACC DET (BURST)
PULSE GEN.
APC SW1
NP CONV. REC
COLOR KILLER ID DET
PB APC
REC APC
X TAL VCO/OSC
CR DET 2fsc
DOWN CONV.
PB/REC DISCRI
REC AFC
1/2 PHASE SW
4PHASE GEN
1/2 2fl VCO
B. E
C. K
SW30/25
SSB DATA CLK
SW CTL
LINE MUTE
VCA
DET
EE
PB AMP
EP OFF
L1 (AUX)
L2 (TU)
PB
REC ON
EP ON
AUDIO SECTION
REC MUTE
ATT
REC AMP
X1
C14~C16
R6,R7,L3
FILTER
IC1
Q15
BUF
IC2
CCD DL
CLK
Q258
R280,R281
R284,C271
LPF & BUF
Q1
BUF
Q21
BUF
FROM/TO SERVO
Fsc
V PULSE
D FF
C SYNC
FROM/TO SYSCON
VIDEO DATA
VIDEO CLK
VIDEO ENV
R
P
S
N
1
2
3
4
5
A
B
C
D


FROM/TO TUNER
TU VIDEO
RF VIDEO
06 TERMINAL
CN1401
CN1411
RF VIDEO
LINE VIDEO
VIDEO OUT
TU VIDEO
IC1301
CS
S CLK
S DATA
OS CE
OS CLK
OS DATA
(ON SCREEN)
XTAL IN
Q1301,Q1302
R1302~R1304,R1306
C1314,C1315,L1304
LPF
EQ201
EQ
P MUTE
ES
Q201,Q202
Q206
BUF
IC201
CH+ DATA
CH+ CLK
IIL LOGIC
Q1~Q4
SW
CTL
AMP
CLAMP
PB
TU
DEC
AUX
Q204
Q205
J1412
AV2 IN
J1411
AV1
IN/OUT
43 PRE/REC
VIDEO HEAD
CN101
CH1
CH2
NC
IC101
EP REC
SP REC
SW6
PB
REC
SP
EP
COMP
DET
REC IDLE
HPF
ENV DET
VCA
REC ADJ
LOGIC
SP/EP REC/PB
ENV DET T. PLAY
AGC CONT
R. MUTE
TP111
DFF
CN1
CN102
D. FF
SSB DATA
SSB CLK
C. SYNC
COLOR ROT
PB FM
REC FM
REC COLOR
VIDEO ENV
TP106
PB FM
Q101
BUF
AGC DET
NOT USED
REC CURRENT DET
R101,R102
C101,C102
MIX
Q104

4.4 VIDEO AND AUDIO SCHEMATIC DIAGRAM

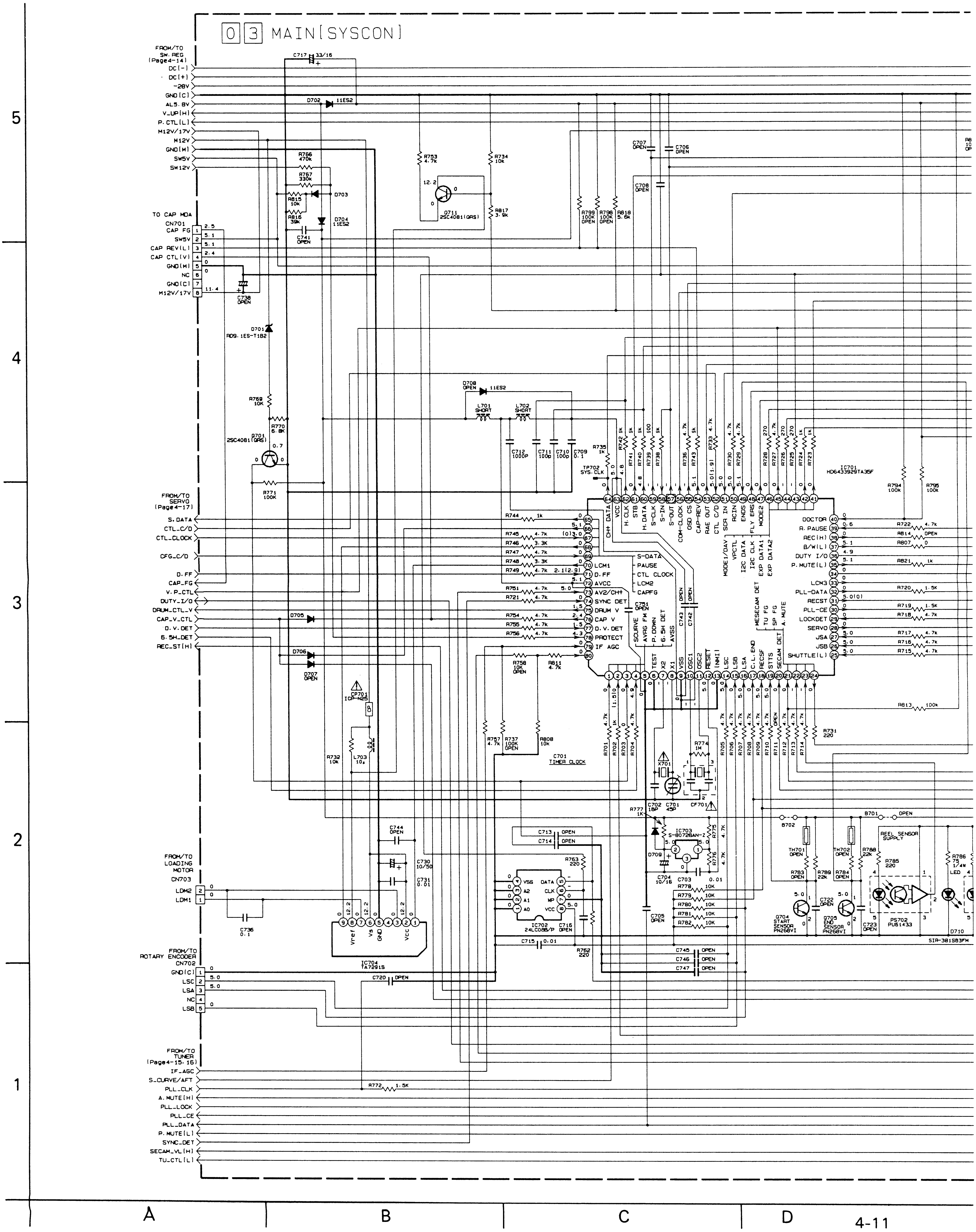

03 MAIN(VIDEO/AUDIO)
FROM SW. REG (Page4-14)
SW5V
SW12V
NOT USED
IC251 LA7337
IC252
FROM/TO SERVO (Page4-17)
D. FF(V)
C. SYNC
V. PULSE
IC2 MSM7470-71MS-XE
TP255 C. SYNC OPEN
WF1
WF2
WF3
WF4
WF12
WF13
WF14
FROM/TO SYSCON (Page4-12)
SECAM_DET
EE(L)
A. MUTE(H)
MESECAM_DET
V. APT_ON
V. P_CTL
(OPEN) GND
CCIR(L)
COMB_OFF(L)
PB_SPE(L)
SP(L)
B/W(L)
N. REC(L)
N. REC_ST(L)
VIDEO_CLK
VIDEO_DATA
VIDEO_ENV
REC(H)
FLY_ERS_ON(L)
BEST(L)
DOC_OFF(L)
Q15 2SA1576(QRS)
5
4
3
2
1
A
B
C
D



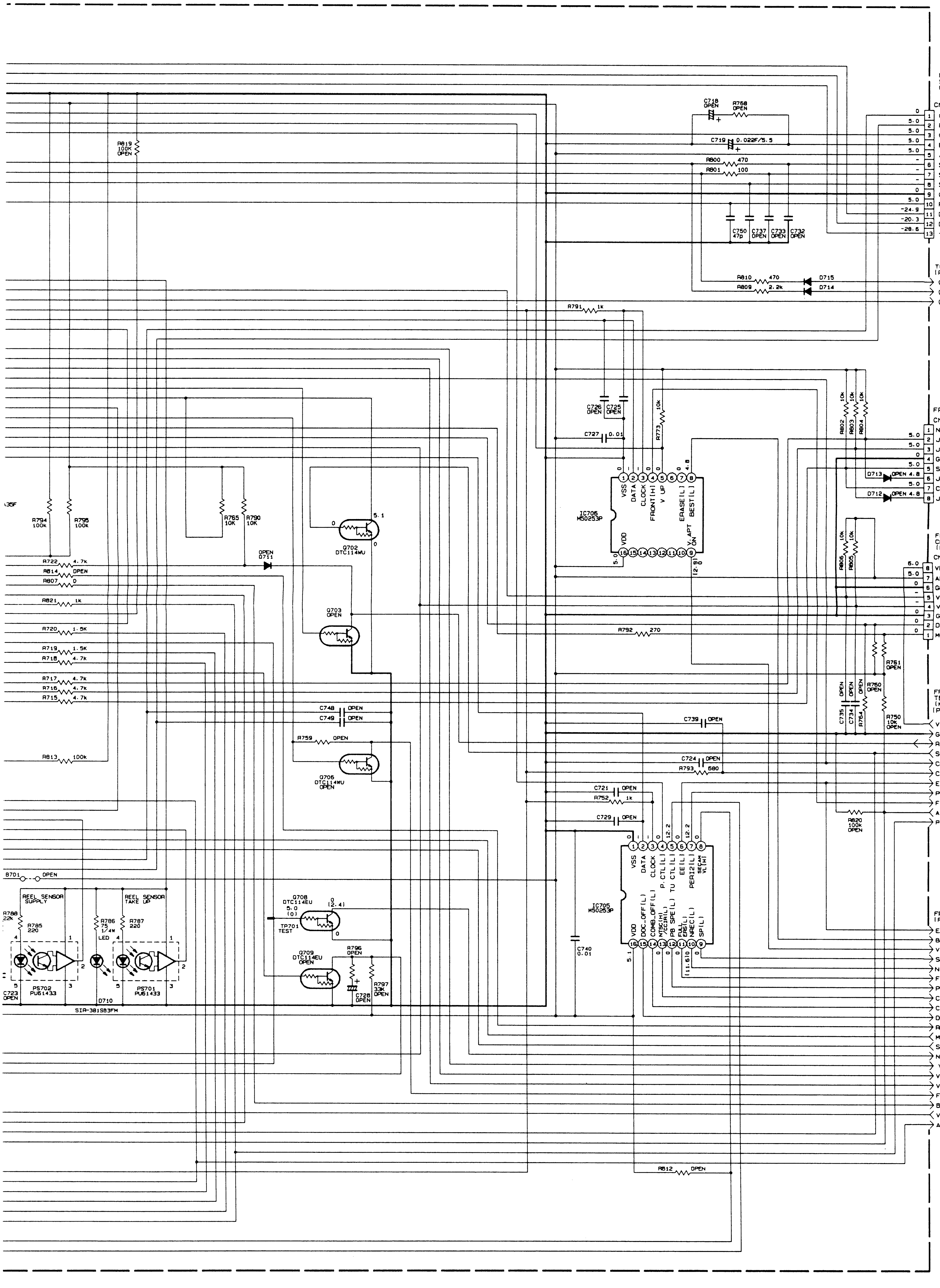
FROM/TO TERM(MAIN) (Page4-22)
GND(V)
LINE_VIDEO
TU/F_VIDEO
AUDIO_OUT
GND(A)
AUDIO_IN_1
AUDIO_IN_2
CTL_A
FROM TUNER (Page4-16)
SYNC_DET
FROM SYSCON (Page4-12)
FULL_E.ON(L)
TO A/C HEAD CN301
P/R
A.E
CTL
FROM/TO SERVO (Page4-17.18)
CTL_HEAD(+)
CTL_HEAD(-)
GND
fsc
CN302
FE
FROM/TO ON SCREEN (Page4-19)
VIDEO_OUT
2fsc
SW5V(OSD)
FROM/TO PRE/REC CN102 (Page4-36) CN1
REC COLOR
REC FM
PB FM
GND
COLOR.ROT
C.SYNC
SSB.CLK
SSB.DATA
D.FF
BEST(L)
SW5V
VIDEO ENV.
GND
REC(H)
SW12V
FLY ST
OPEN
IC1 HA118203AF
Q314 DTA144WU
Q304 DTA114EU
Q305 2SC4081(QRS)
Q306 2SC4081(QRS)
Q307 2SA1576(QR)
Q308 2SA1576(QR)
Q309 DTA114EU
Q310 2SC4081(QRS)
Q311 2SC4081(QRS)
T301
T302 PELN0861 OPEN
TP333 A.ERASE
TP334 F.ERASE
Q302 DTA144WU
Q303 DTC114TU
Q301 DTC114EU
Q16 DTC144WU
Q17 OPEN
Q19 2SC4081(QRS)
Q20 DTA144WU
Q21 2SC4081(QRS)
Q1 2SC4081(QRS)
Q24 DTA144WU OPEN
Q252 OPEN
Q253 OPEN
Q258 2SA1576(QRS)
Q259 OPEN
Q15 2SA1576(QRS)
Q8 OPEN
L2 PELN1203
X1
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF15
WF16
SQUELCH
C.SQUELCH
CLEAR SYNC
FBC ALC
AGC
A.C.PULSE DET
CLAMP
REC AGC Det PB ALC
Sync Sep.
N.C. D.E.
YNR
APT
Y-LPF
N.L.Emph De-emph
FBC /ALC
Main De-emph
DO Edge DET Delay
SUB LPF
DEMO
DLIM
Main Emph Car.Int. NC/DC
fo/Dev Adj S-DET
FM MOD
P EQ
FM AGC
DET
1M HPF
629 TRAP
7M LPF
2M LPF
BAND GAP
Color Killer
H-P
Killer DET Out
B.D
HPF
BPF
ACC
COMP
Pulse Gen.
ACC DET (BURST)
HPF fh TRAP
HIFI TRAP
Main Conv1
Main Conv2
1.3M LPF
LEVEL Det2
LEVEL Det1
DL 150n
VCA
LPF
B.E
APC SW1
PB APC
REC APC
Color Killer ID DET.
X'tal VCO/OSC
DOWN Conv.
PB/REC Discri
REC AFC
1/2 PHASE SW
CR DET 2fsc
4phase Gen
1/2 2fL VCO
MESECAM DET
C.K
SW30/25
SSB DATA CLK
CCD CNT
LINE MUTE
REC MUTE
ATT
REC AMP
50k HPF
PB AMP
EP OFF
EP ON
REC ON
Y-Vcc
A.MUTE
A-GND
C-GND
C-Vcc
C-COMB TYPE

NOTE : For VIDEO & AUDIO waveforms, please refer to page4-23.

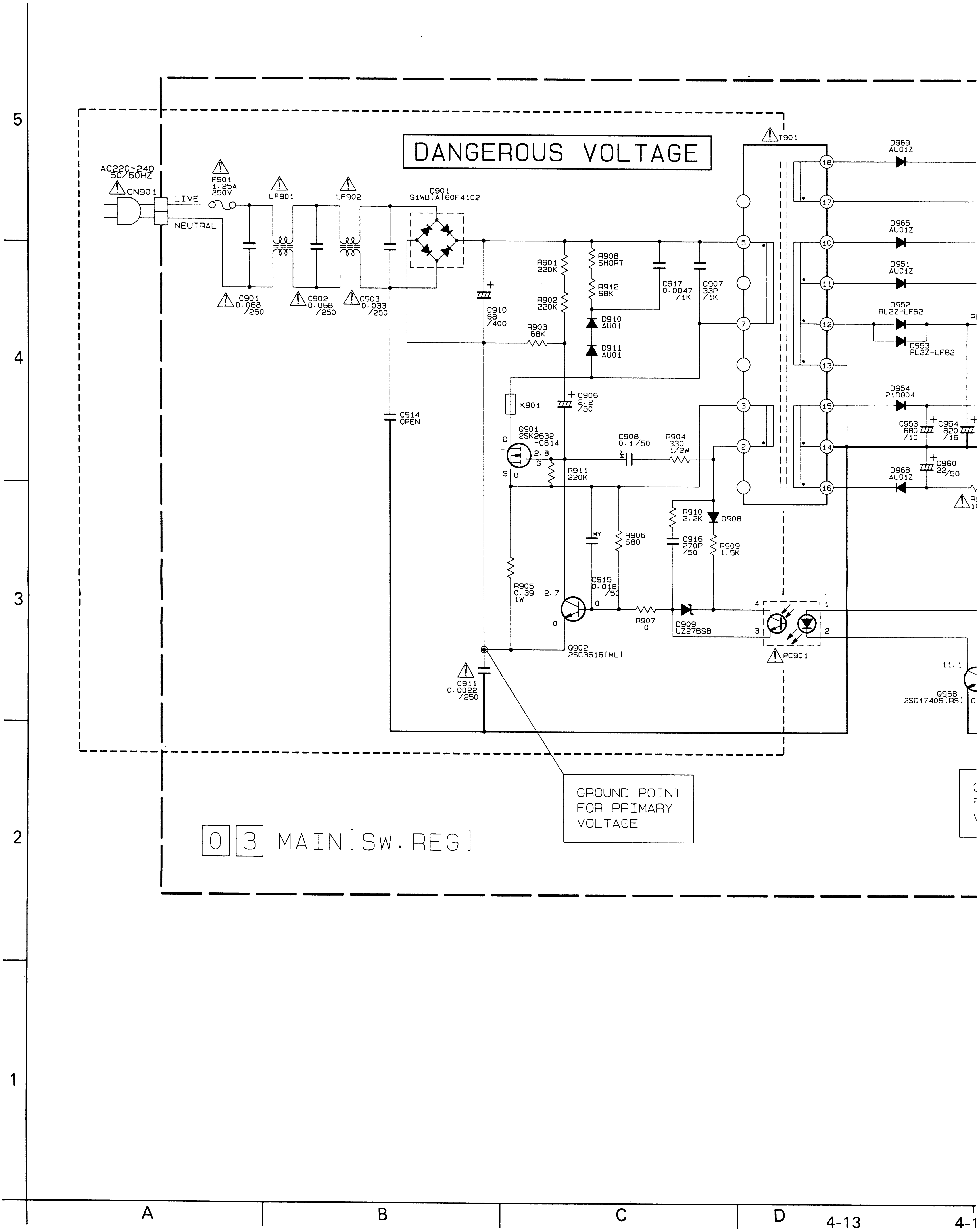
4.5 SYSTEM CONTROL SCHEMATIC DIAGRAM

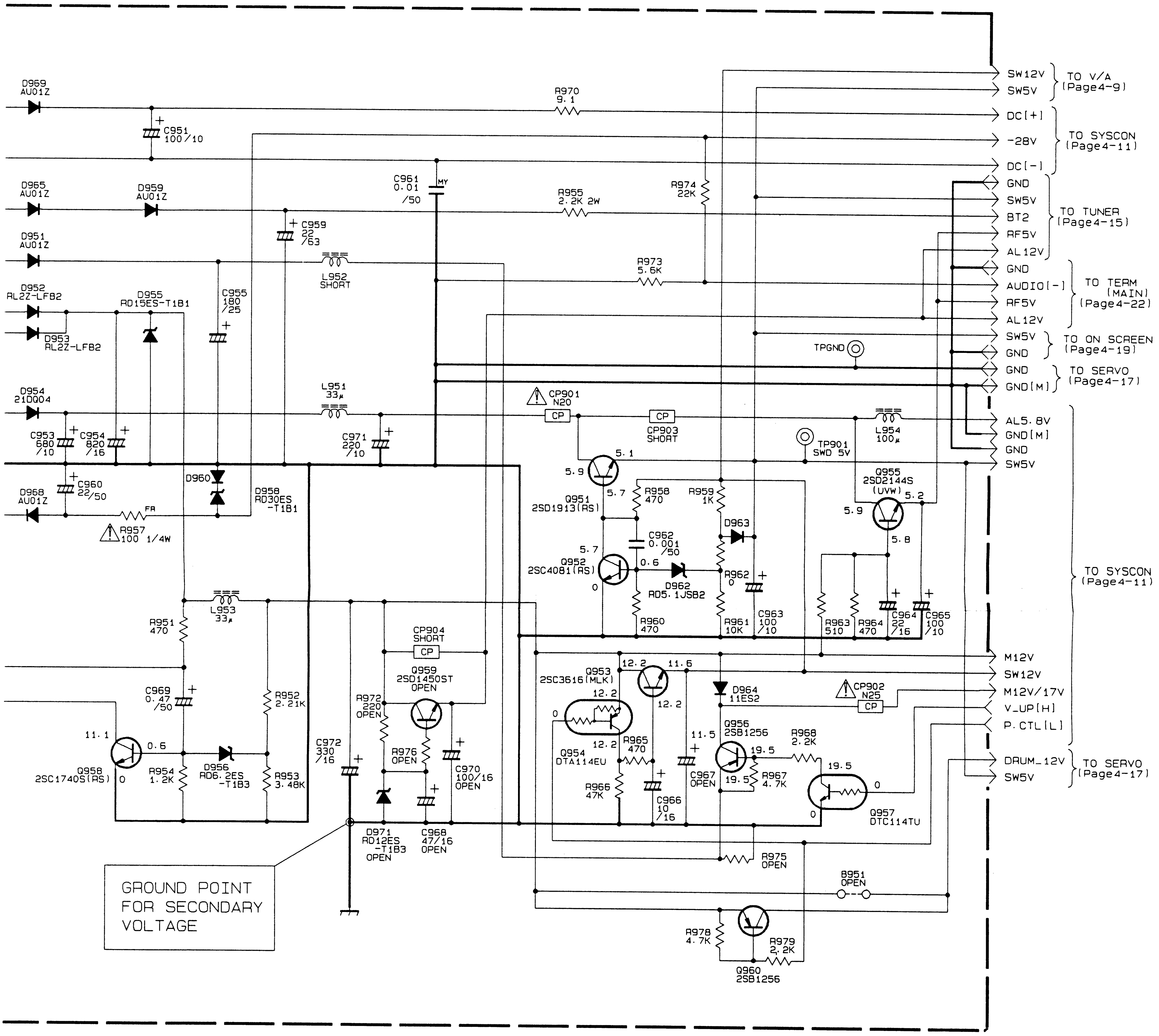


03 MAIN[SYSCON]
FROM/TO SW. REG (Page4-14)
DC(-)
DC(+)
-28V
GND(C)
AL5.8V
V_UP(H)
P.CTL(L)
M12V/17V
M12V
GND(M)
SW5V
SW12V
TO CAP MDA CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(V)
GND(M)
NC
GND(C)
M12V/17V
FROM/TO SERVO (Page4-17)
S.DATA
CTL_C/D
CTL_CLOCK
CFG_C/D
D.FF
CAP_FG
V.P_CTL
DUTY_I/O
DRUM_CTL_V
CAP_V_CTL
D.V.DET
6.5H_DET
REC_ST(H)
FROM/TO LOADING MOTOR CN703
LDM2
LDM1
FROM/TO ROTARY ENCODER CN702
GND(C)
LSC
LSA
NC
LSB
FROM/TO TUNER (Page4-15.16)
IF_AGC
S_CURVE/AFT
PLL_CLK
A.MUTE(H)
PLL_LOCK
PLL_CE
PLL_DATA
P.MUTE(L)
SYNC_DET
SECAM_VL(H)
TU_CTL(L)
C717 33/16
D702 11ES2
D703
D704 11ES2
R766 470k
R767 330k
R815 10k
R816 39k
C741 OPEN
C738 OPEN
D701 RD9.1ES-T1B2
R769 10K
R770 6.8K
Q701 2SC4081(QRS)
R771 100K
R753 4.7k
R734 10k
Q711 2SC4081(QRS)
R817 3.9k
C707 OPEN
C706 OPEN
C708 OPEN
R799 100K OPEN
R798 100K OPEN
R818 5.6k
D708 OPEN 11ES2
L701 SHORT
L702 SHORT
C712 1000P
C711 100p
C710 100p
C709 0.1
R735 1K
TP702 SYS.CLK
IC701 HD6433929TA35F
R794 100k
R795 100k
CH+ DATA
VCC
H.CLK
STB
H.DATA
S-CLK
S-IN
S-OUT
COM-CLOCK
OSD CS
CAP-REV
RAE OUT
CTL C/D
SCR IN
RCIN
ENDS
FLY ERS
MODE2
MODE1/DAV
VPCTL
I2C DATA
I2C CLK
EXP DATA1
EXP DATA2
DOCTOR
R.PAUSE
REC(H)
B/W(L)
DUTY I/O
P.MUTE(L)
LCM3
PLL-DATA
RECST
PLL-CE
LOCKDET
SERVO
JSA
JSB
SHUTTLE(L)
R722 4.7k
R814 OPEN
R807 0
R821 1k
R720 1.5K
R719 1.5K
R718 4.7k
R717 4.7k
R716 4.7k
R715 4.7k
R744 1k
R745 4.7k
R746 3.3K
R747 4.7k
R748 3.3K
R749 4.7k
R751 4.7k
R721 4.7k
R754 4.7k
R755 4.7k
R756 4.7k
R758 10K OPEN
R811 4.7k
LCM1
D.FF
AVCC
AV2/CH+
SYNC DET
DRUM V
CAP V
D.V.DET
PROTECT
IF AGC
S-DATA
PAUSE
CTL CLOCK
LCM2
CAPFG
C751 OPEN
SCURVE
AVRG FM
P.DOWN
6.5H DET
AVSS
C743 OPEN
C742 OPEN
TEST
X2
X1
VSS
OSC1
OSC2
RESET
(NMI)
LSC
LSB
LSA
C.L.END
RECSF
STTS
SECAM DET
TU FG
SP FG
A.MUTE
D705
D706
D707 OPEN
CP701 ICP-N25
R732 10k
L703 10μ
R757 4.7k
R737 100K OPEN
R808 10k
C701 TIMER CLOCK
R701
R702
R703
R704
R705
R706
R707
R708
R709
R710
R711
R712
R713
R714
R731 220
R813 100k
R774 1M
X701
CF701
C702 18P
C701 45P
R777 1K
IC703 S-80728AN-Z
D709
C704 10/16
C703 0.01
R775 4.7K
R776 4.7K
R778 10K
R779 10K
R780 10K
R781 10K
R782 10K
C705 OPEN
C744 OPEN
C730 10/50
C731 0.01
C736 0.1
IC704 TA7291S
Vref
Vs
GND
Vcc
C713 OPEN
C714 OPEN
R763 220
IC702 24LC08B/P
VSS
A2
A1
A0
DATA
CLK
WP
VCC
C716 OPEN
C715 0.01
R762 220
C745 OPEN
C746 OPEN
C747 OPEN
C720 OPEN
R772 1.5K
B701 OPEN
B702
TH701 OPEN
TH702 OPEN
R788 22k
R783 OPEN
R789 22k
R784 OPEN
REEL SENSOR SUPPLY
R785 220
R786 75 1/4W
LED
Q704 START SENSOR PN268VI
Q705 END SENSOR PN268VI
C722 OPEN
C723 OPEN
PS702 PU61433
D710
SIR-381S83FM
5
4
3
2
1
A
B
C
D


FROM/TO SW/DISPLAY CN1201 (Page4-32)
CN802
1 CASS SW
2 REC SAFEY
3 CPU 5V
4 BACK UP 5V
5 AL 5V
6 S CLK
7 S DATA
8 STB
9 GND(C)
10 RC IN
11 DC(-)
12 DC(+)
13 -28V
0
5.0
5.0
5.0
5.0
-
-
-
0
5.0
-24.9
-20.3
-28.6
C718 OPEN
R768 OPEN
C719 0.022F/5.5
R800 470
R801 100
C750 47p
C737 OPEN
C733 OPEN
C732 OPEN
R819 100K OPEN
TO ON SCREEN (Page4-19)
OS_DATA
OS_CLK
OS_CE
R810 470
R809 2.2k
D715
D714
R791 1k
C726 OPEN
C725 OPEN
C727 0.01
R773 10k
IC706 M50253P
VSS
DATA
CLOCK
FRONT(H)
V UP
ERASE(L)
BEST(L)
V_APT ON
VDD
5.0
(12.9)
4.8
FROM JOG
CN705
1 N.C
2 JSA
3 JSB
4 GND
5 SHUTTLE(L)
6 J2
7 C2
8 J1
OPEN
R802 10k
R803 10k
R804 10k
D713 OPEN 4.8
D712 OPEN 4.8
FRONT/TO PDC CN1901 (Page4-39)
CN751
8 VPS(VIDEO)
7 AL5V
6 GND
5 VP SCL
4 VP SDA
3 GND
2 DAV/MODE1
1 MODE2
6.0
5.0
R806 10k
R805 10k
R761 OPEN
R760 OPEN
R750 10K OPEN
C735 OPEN
C734 OPEN
R764 OPEN
R792 270
FROM/TO TERMINAL (MAIN) (Page4-21)
VPS_V.SWD
GND(OPEN)
RAE/R.PAUSE
SCR(H)
CH+_DATA
CH+_CLK
EE(L)
PERI2(L)
FRONT(H)
AV2/CH+
P.MUTE(L)
R820 100k OPEN
C739 OPEN
C724 OPEN
R793 680
C721 OPEN
R752 1k
C729 OPEN
IC705 M50253P
VSS
DATA
CLOCK
P.CTL(L)
TU CTL(L)
EE(L)
PERI2(L)
SECAM YL(H)
VDD
DOC_OFF(L)
COMB_OFF(L)
MESEC(H) /CCIR(L)
PB SPE(L)
FULL ERS(L)
NREC(L)
SP(L)
12.2
5.1
(11.6)
C740 0.01
FRONT/TO V/A (Page4-9)
EE(L)
BEST(L)
V.APT_ON
SP(L)
N.REC(L)
FULL_E.ON(L)
PB_SPE(L)
CCIR(L)
COMB_OFF(L)
DOC_OFF(L)
REC(H)
MESECAM_DET
SECAM_DET
N.REC_ST(L)
V.P_CTL
VIDEO_CLK
VIDEO_DATA
FLY_ERS_ON(L)
B/W(L)
VIDEO_ENV
A.MUTE(H)
R812 OPEN
R794 100k
R795 100k
R765 10K
R790 10K
Q702 DTC114WU
5.1
OPEN D711
R722 4.7k
R814 OPEN
R807 0
R821 1k
R720 1.5K
R719 1.5K
R718 4.7k
R717 4.7k
R716 4.7k
R715 4.7k
R813 100k
Q703 OPEN
C748 OPEN
C749 OPEN
R759 OPEN
Q706 DTC114WU OPEN
Q708 DTC114EU
5.0 (0)
0 (2.4)
TP701 TEST
Q709 DTC114EU OPEN
R796 OPEN
R797 33K OPEN
C728 OPEN
B701 OPEN
REEL SENSOR SUPPLY
REEL SENSOR TAKE UP
R788 22k
R785 220
R786 75 1/4W
LED
R787 220
PS702 PU61433
PS701 PU61433
C723 OPEN
D710
SIR-381S83FM
35F

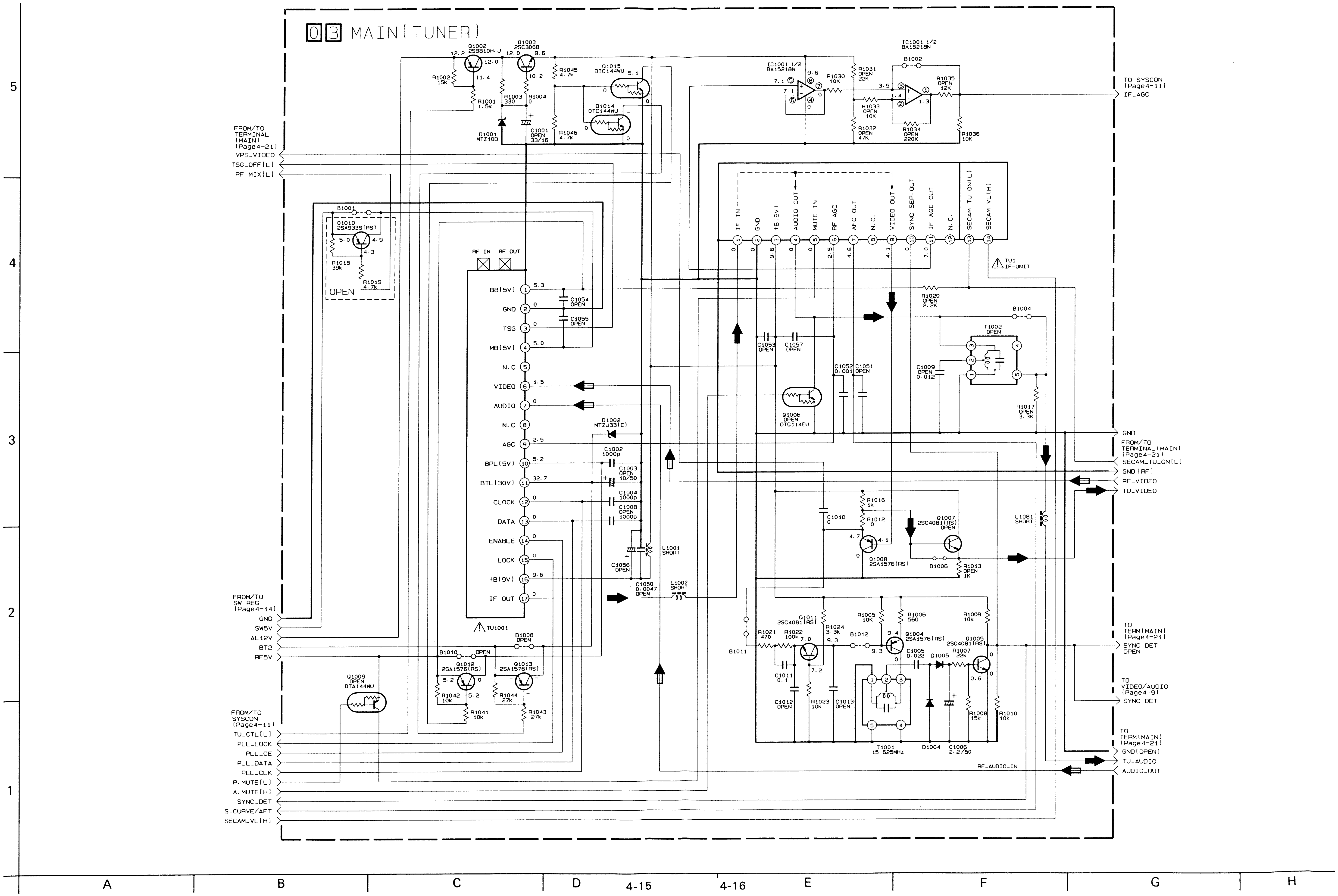
4.6 SWITCHING REGULATOR SCHEMATIC DIAGRAM


DANGEROUS VOLTAGE
AC220-240
50/60HZ
CN901
LIVE
NEUTRAL
F901
1.25A
250V
LF901
LF902
D901
S1WB(A)60F4102
C901
0.068
/250
C902
0.068
/250
C903
0.033
/250
C910
68
/400
C914
OPEN
R901
220K
R902
220K
R903
68K
R908
SHORT
R912
68K
D910
AU01
D911
AU01
C917
0.0047
/1K
C907
33P
/1K
C906
2.2
/50
K901
Q901
2SK2632
-CB14
D
G
S
2.8
0
C908
0.1/50
R904
330
1/2W
R911
220K
R910
2.2K
D908
R909
1.5K
C916
270P
/50
R906
680
C915
0.018
/50
R905
0.39
1W
2.7
0
Q902
2SC3616(ML)
R907
0
D909
UZ27BSB
PC901
1
2
3
4
C911
0.0022
/250
T901
18
17
5
10
11
7
12
13
3
15
2
14
16
D969
AU01Z
D965
AU01Z
D951
AU01Z
D952
RL2Z-LFB2
D953
RL2Z-LFB2
D954
21D004
C953
680
/10
C954
820
/16
C960
22/50
D968
AU01Z
11.1
Q958
2SC1740S(RS)
GROUND POINT
FOR PRIMARY
VOLTAGE
0 3 MAIN[SW.REG]
5
4
3
2
1
A
B
C
D

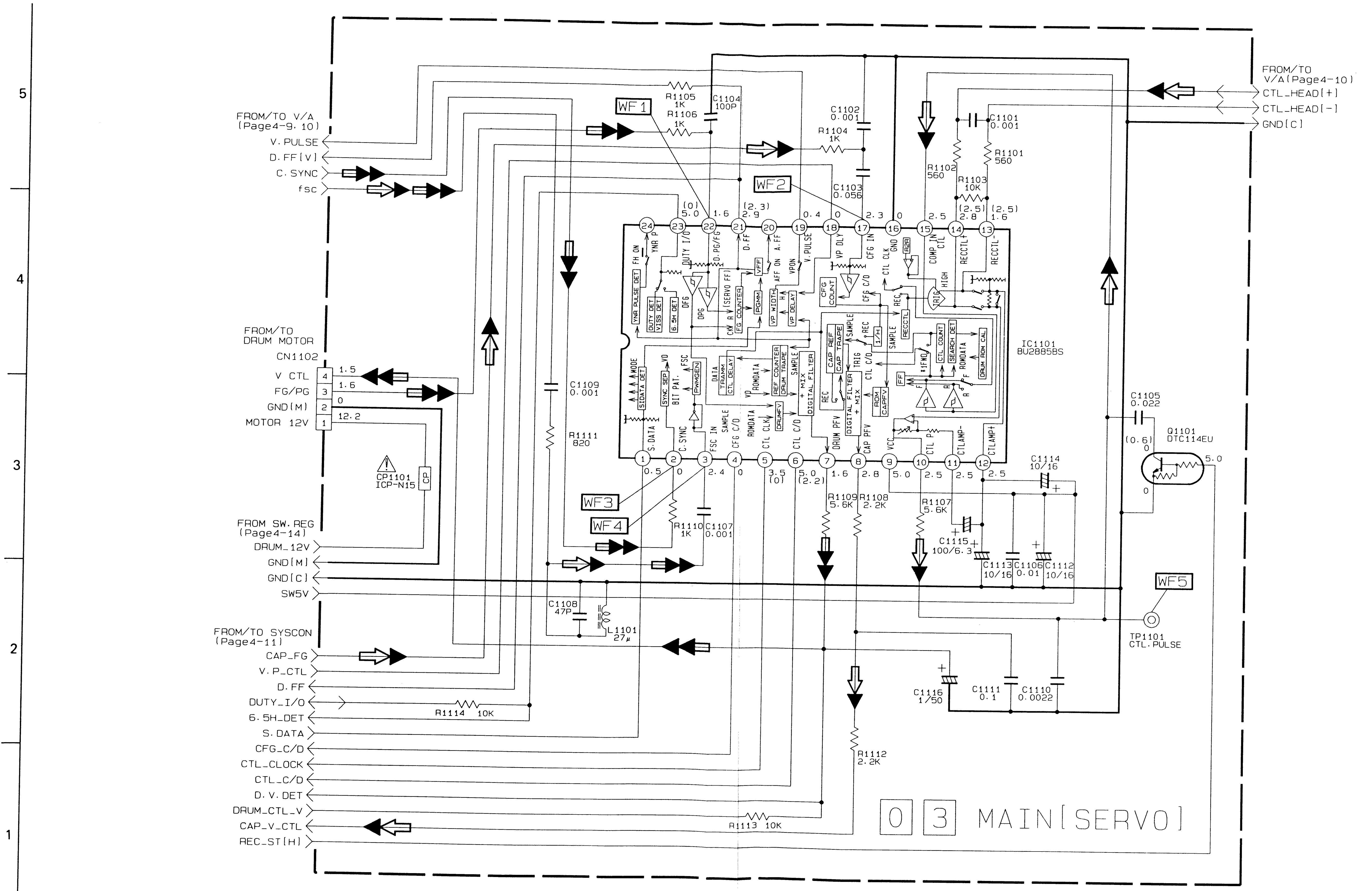


D969
AU01Z
C951
100/10
R970
9.1
D965
AU01Z
D959
AU01Z
C961
0.01
/50
MY
R955
2.2K 2W
R974
22K
C959
22
/63
D951
AU01Z
L952
SHORT
R973
5.6K
D952
RL2Z-LFB2
D955
RD15ES-T1B1
C955
180
/25
D953
RL2Z-LFB2
D954
21DQ04
L951
33μ
CP901
N20
CP
CP903
SHORT
L954
100μ
TP901
SWD 5V
TPGND
C953
680
/10
C954
820
/16
C971
220
/10
D960
D958
RD30ES
-T1B1
D968
AU01Z
C960
22/50
FR
R957
100 1/4W
Q951
2SD1913(RS)
5.1
5.9
5.7
R958
470
R959
1K
Q955
2SD2144S
(UVW)
5.2
5.9
5.8
D963
C962
0.001
/50
Q952
2SC4081(RS)
5.7
0
0.6
D962
RD5.1JSB2
R962
0
R951
470
L953
33μ
R960
470
R961
10K
C963
100
/10
R963
510
R964
470
C964
22
/16
C965
100
/10
CP904
SHORT
CP
Q959
2SD1450ST
OPEN
Q953
2SC3616(MLK)
12.2
11.6
12.2
12.2
12.2
0
D964
11ES2
CP902
N25
CP
C969
0.47
/50
R952
2.21K
R972
220
OPEN
R976
OPEN
C970
100/16
OPEN
Q954
DTA114EU
R965
470
R966
47K
C966
10
/16
C967
OPEN
Q956
2SB1256
11.5
19.5
19.5
R967
4.7K
R968
2.2K
19.5
0
0
Q957
DTC114TU
Q958
2SC1740S(RS)
11.1
0.6
0
R954
1.2K
D956
RD6.2ES
-T1B3
R953
3.48K
C972
330
/16
D971
RD12ES
-T1B3
OPEN
C968
47/16
OPEN
R975
OPEN
B951
OPEN
GROUND POINT
FOR SECONDARY
VOLTAGE
R978
4.7K
R979
2.2K
Q960
2SB1256
SW12V
SW5V
TO V/A
(Page4-9)
DC(+)
-28V
DC(-)
TO SYSCON
(Page4-11)
GND
SW5V
BT2
RF5V
AL12V
TO TUNER
(Page4-15)
GND
AUDIO(-)
RF5V
AL12V
TO TERM
(MAIN)
(Page4-22)
SW5V
GND
TO ON SCREEN
(Page4-19)
GND
GND(M)
TO SERVO
(Page4-17)
AL5.8V
GND(M)
GND
SW5V
M12V
SW12V
M12V/17V
V_UP(H)
P.CTL(L)
TO SYSCON
(Page4-11)
DRUM_12V
SW5V
TO SERVO
(Page4-17)

4.7 TUNER SCHEMATIC DIAGRAM

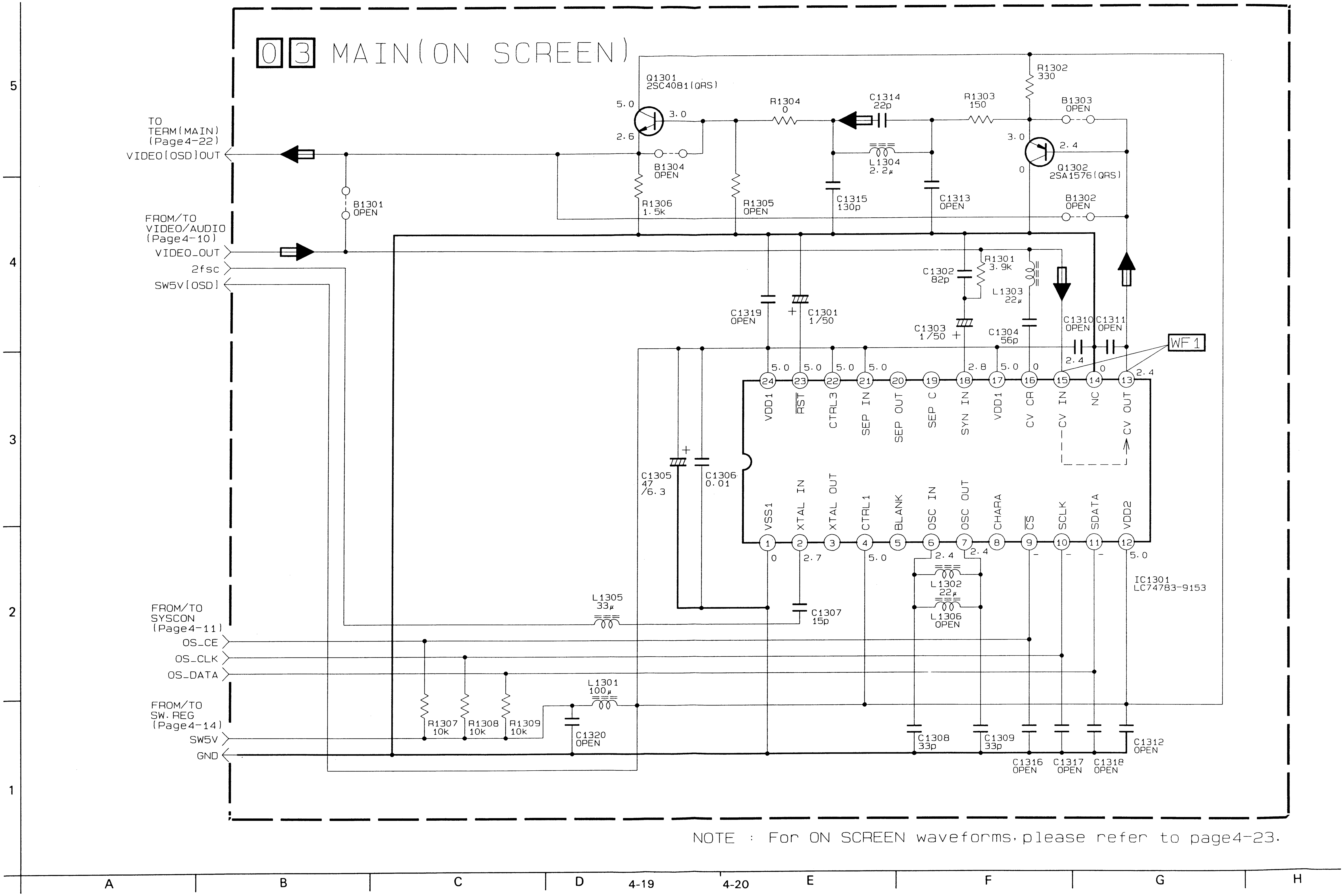

03 MAIN(TUNER)
Q1002 2SB810H.J
Q1003 2SC3068
Q1015 DTC144WU
Q1014 DTC144WU
R1002 15k
R1001 1.5k
R1003 330
R1004 0
R1045 4.7k
R1046 4.7k
D1001 MTZ10D
C1001 OPEN 33/16
IC1001 1/2 BA15218N
R1030 10K
R1031 OPEN 22K
R1032 OPEN 47K
R1033 OPEN 10K
R1034 OPEN 220K
R1035 OPEN 12K
R1036 10K
B1002
TO SYSCON (Page4-11) IF_AGC
FROM/TO TERMINAL (MAIN) (Page4-21)
VPS_VIDEO
TSG_OFF(L)
RF_MIX(L)
B1001
Q1010 2SA933S(RS)
R1018 39k
R1019 4.7k
OPEN
RF IN
RF OUT
BB(5V)
GND
TSG
MB(5V)
N.C
VIDEO
AUDIO
N.C
AGC
BPL(5V)
BTL(30V)
CLOCK
DATA
ENABLE
LOCK
+B(9V)
IF OUT
TU1001
C1054 OPEN
C1055 OPEN
D1002 MTZJ33(C)
C1002 1000p
C1003 OPEN 10/50
C1004 1000p
C1008 OPEN 1000p
C1056 OPEN
L1001 SHORT
C1050 0.0047 OPEN
L1002 SHORT
IF IN
GND
+B(9V)
AUDIO OUT
MUTE IN
RF AGC
AFC OUT
N.C.
VIDEO OUT
SYNC SEP. OUT
IF AGC OUT
N.C.
SECAM TU ON(L)
SECAM VL(H)
TU1 IF-UNIT
R1020 OPEN 2.2K
B1004
T1002 OPEN
C1053 OPEN
C1057 OPEN
C1052 0.001
C1051 OPEN
C1009 OPEN 0.012
Q1006 OPEN DTC114EU
R1017 OPEN 3.3K
GND
FROM/TO TERMINAL(MAIN) (Page4-21)
SECAM_TU_ON(L)
GND(RF)
RF_VIDEO
TU_VIDEO
R1016 1k
R1012 0
C1010 0
Q1007 2SC4081(RS) OPEN
Q1008 2SA1576(RS)
B1006
R1013 OPEN 1K
L1081 SHORT
FROM/TO SW REG (Page4-14)
GND
SW5V
AL12V
BT2
RF5V
B1008 OPEN
B1010 OPEN
Q1012 2SA1576(RS)
Q1013 2SA1576(RS)
R1042 10k
R1041 10k
R1044 27k
R1043 27k
Q1009 OPEN DTA144WU
FROM/TO SYSCON (Page4-11)
TU_CTL(L)
PLL_LOCK
PLL_CE
PLL_DATA
PLL_CLK
P.MUTE(L)
A.MUTE(H)
SYNC_DET
S_CURVE/AFT
SECAM_VL(H)
Q1011 2SC4081(RS)
R1021 470
R1022 100K
R1024 3.3K
B1012
B1011
R1005 10K
R1006 560
Q1004 2SA1576(RS)
R1009 10k
Q1005 2SC4081(RS)
C1005 0.022
D1005
R1007 22k
C1011 0.1
C1012 OPEN
R1023 10K
C1013 OPEN
T1001 15.625MHz
D1004
C1006 2.2/50
R1008 15k
R1010 10k
TO TERM(MAIN) (Page4-21) SYNC DET OPEN
TO VIDEO/AUDIO (Page4-9) SYNC DET
TO TERM(MAIN) (Page4-21) GND(OPEN)
TU_AUDIO
AUDIO_OUT
RF_AUDIO_IN
A
B
C
D
E
F
G
H
1
2
3
4
5

4.8 SERVO SCHEMATIC DIAGRAM


FROM/TO V/A (Page4-9, 10)
V. PULSE
D. FF[V]
C. SYNC
fsc
FROM/TO DRUM MOTOR
CN1102
V CTL
FG/PG
GND[M]
MOTOR 12V
CP1101
ICP-N15
FROM SW. REG (Page4-14)
DRUM_12V
GND[M]
GND[C]
SW5V
FROM/TO SYSCON (Page4-11)
CAP_FG
V. P_CTL
D. FF
DUTY_I/O
6. 5H_DET
S. DATA
CFG_C/D
CTL_CLOCK
CTL_C/D
D. V. DET
DRUM_CTL_V
CAP_V_CTL
REC_ST[H]
FROM/TO V/A(Page4-10)
CTL_HEAD[+]
CTL_HEAD[-]
GND[C]
WF1
WF2
WF3
WF4
WF5
R1105 1K
R1106 1K
C1104 100P
C1102 0.001
R1104 1K
C1103 0.056
C1101 0.001
R1101 560
R1102 560
R1103 10K
C1109 0.001
R1111 820
R1110 1K
C1107 0.001
C1108 47P
L1101 27μ
R1109 5.6K
R1108 2.2K
R1107 5.6K
C1115 100/6.3
C1113 10/16
C1106 0.01
C1112 10/16
C1114 10/16
C1105 0.022
Q1101 DTC114EU
TP1101 CTL. PULSE
C1116 1/50
C1111 0.1
C1110 0.0022
R1112 2.2K
R1114 10K
R1113 10K
IC1101 BU2885BS
Y/NR P
FH ON
DUTY I/O
D.PG/FG
D.FF
A.FF
V.PULSE
VP DLY
CFG IN
CTL CLK
GND
COMP IN CTL
RECCTL+
RECCTL-
S.DATA
C.SYNC
FSC IN
CFG C/D
CTL CLK
CTL C/D
DRUM PFV
CAP PFV
VCC
CTL P
CTLAMP-
CTLAMP+
0 3 MAIN[SERVO]
A
B
C
D
E
F
G
H
1
2
3
4
5

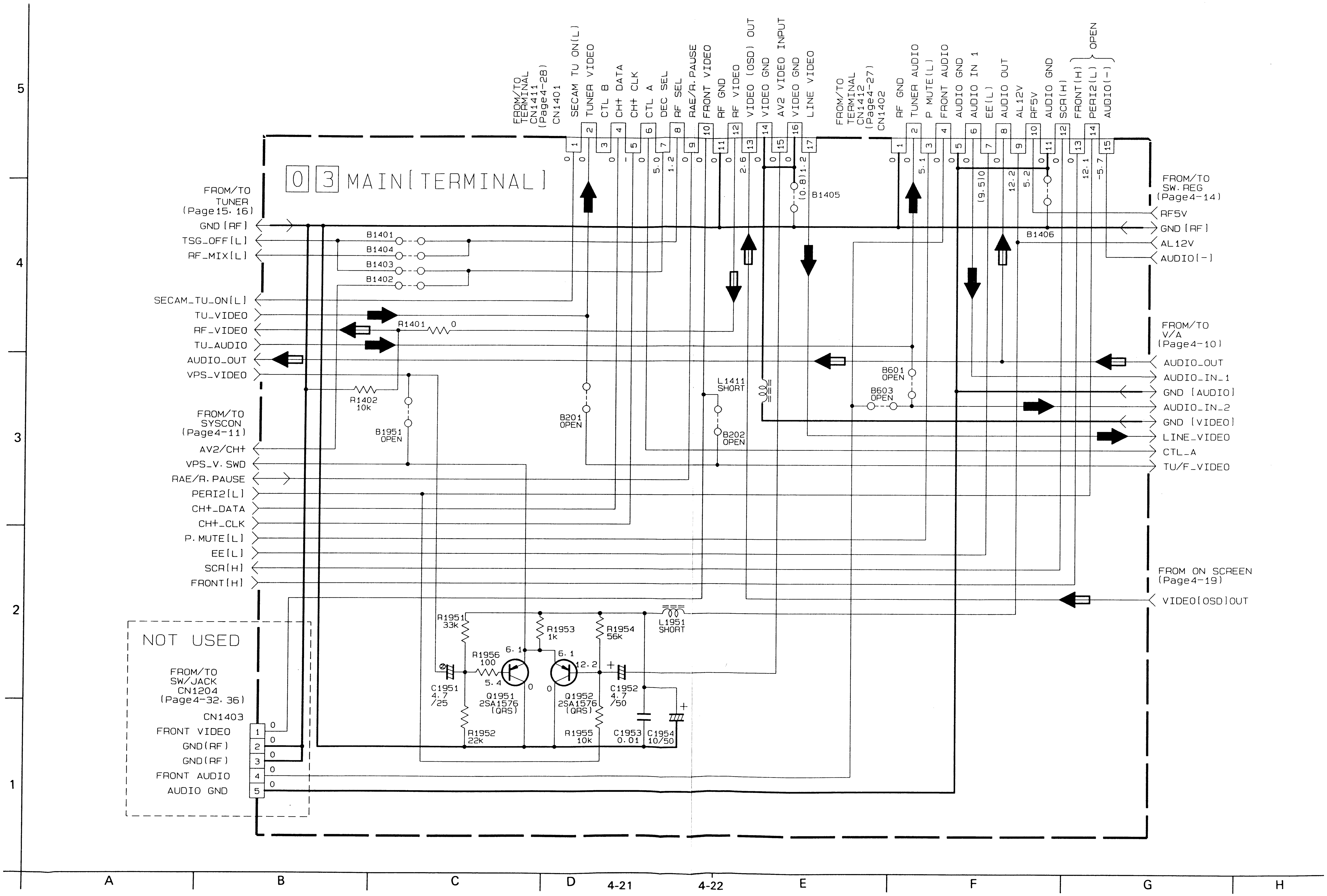
NOTE : For SERVO waveforms, please refer to page4-23.

4.9 ON SCREEN SCHEMATIC DIAGRAM


03 MAIN(ON SCREEN)
TO TERM(MAIN) (Page4-22)
VIDEO(OSD)OUT
FROM/TO VIDEO/AUDIO (Page4-10)
VIDEO_OUT
2fsc
SW5V(OSD)
FROM/TO SYSCON (Page4-11)
OS_CE
OS_CLK
OS_DATA
FROM/TO SW. REG (Page4-14)
SW5V
GND
Q1301 2SC4081(QRS)
5.0
3.0
2.6
B1304 OPEN
R1306 1.5k
B1301 OPEN
R1304 0
R1305 OPEN
C1314 22p
L1304 2.2μ
C1315 130p
C1313 OPEN
R1303 150
R1302 330
B1303 OPEN
Q1302 2SA1576(QRS)
3.0
2.4
0
B1302 OPEN
C1319 OPEN
C1301 1/50
C1302 82p
R1301 3.9k
L1303 22μ
C1303 1/50
C1304 56p
C1310 OPEN
C1311 OPEN
WF1
2.4
0
2.4
5.0
5.0
5.0
5.0
2.8
5.0
0
24 VDD1
23 RST
22 CTRL3
21 SEP IN
20 SEP OUT
19 SEP C
18 SYN IN
17 VDD1
16 CV CR
15 CV IN
14 NC
13 CV OUT
1 VSS1
2 XTAL IN
3 XTAL OUT
4 CTRL1
5 BLANK
6 OSC IN
7 OSC OUT
8 CHARA
9 CS
10 SCLK
11 SDATA
12 VDD2
0
2.7
5.0
2.4
2.4
-
-
-
5.0
C1305 47 /6.3
C1306 0.01
L1302 22μ
L1306 OPEN
C1307 15p
L1305 33μ
IC1301 LC74783-9153
L1301 100μ
R1307 10k
R1308 10k
R1309 10k
C1320 OPEN
C1308 33p
C1309 33p
C1316 OPEN
C1317 OPEN
C1318 OPEN
C1312 OPEN
5
4
3
2
1
A
B
C
D
E
F
G
H

NOTE : For ON SCREEN waveforms, please refer to page4-23.

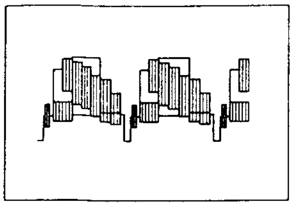
4.10 TERMINAL (MAIN) SCHEMATIC DIAGRAM


03 MAIN[TERMINAL]
FROM/TO TERMINAL CN1411 (Page4-28)
CN1401
SECAM TU ON(L)
TUNER VIDEO
CTL B
CH+ DATA
CH+ CLK
CTL A
DEC SEL
RF SEL
RAE/R.PAUSE
FRONT VIDEO
RF GND
RF VIDEO
VIDEO (OSD) OUT
VIDEO GND
AV2 VIDEO INPUT
VIDEO GND
LINE VIDEO
FROM/TO TERMINAL CN1412 (Page4-27)
CN1402
RF GND
TUNER AUDIO
P MUTE(L)
FRONT AUDIO
AUDIO GND
AUDIO IN 1
EE(L)
AUDIO OUT
AL12V
RF5V
AUDIO GND
SCR(H)
FRONT(H)
PERI2(L)
AUDIO(-)
OPEN
FROM/TO TUNER (Page15, 16)
GND [RF]
TSG_OFF[L]
RF_MIX[L]
SECAM_TU_ON[L]
TU_VIDEO
RF_VIDEO
TU_AUDIO
AUDIO_OUT
VPS_VIDEO
FROM/TO SYSCON (Page4-11)
AV2/CH+
VPS_V. SWD
RAE/R. PAUSE
PERI2[L]
CH+_DATA
CH+_CLK
P. MUTE[L]
EE[L]
SCR[H]
FRONT[H]
B1401
B1404
B1403
B1402
R1401 0
R1402 10k
B1951 OPEN
B201 OPEN
L1411 SHORT
B202 OPEN
B1405
B601 OPEN
B603 OPEN
B1406
FROM/TO SW. REG (Page4-14)
RF5V
GND [RF]
AL12V
AUDIO[-]
FROM/TO V/A (Page4-10)
AUDIO_OUT
AUDIO_IN_1
GND [AUDIO]
AUDIO_IN_2
GND [VIDEO]
LINE_VIDEO
CTL_A
TU/F_VIDEO
FROM ON SCREEN (Page4-19)
VIDEO[OSD]OUT
NOT USED
FROM/TO SW/JACK CN1204 (Page4-32, 36)
CN1403
FRONT VIDEO
GND(RF)
GND(RF)
FRONT AUDIO
AUDIO GND
R1951 33k
R1956 100
R1953 1k
R1954 56k
L1951 SHORT
C1951 4.7 /25
Q1951 2SA1576 (QRS)
Q1952 2SA1576 (QRS)
C1952 4.7 /50
R1952 22k
R1955 10k
C1953 0.01
C1954 10/50
6.1
6.1
5.4
12.2
5.0
1.2
2.6
(0.8)1.2
5.1
(9.5)0
12.2
5.2
12.1
-5.7
A
B
C
D
E
F
G
H
1
2
3
4
5

WAVEFORMS

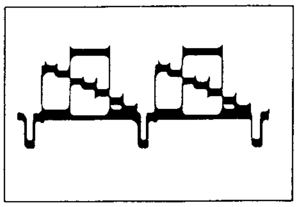
— VIDEO / N.AUDIO —

WF1 IC1-61



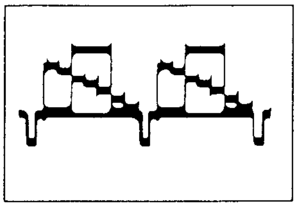
REC 0.74Vp-p
20mV/20μsec /DIV

WF2 IC1-66



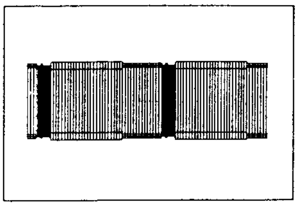
PB 0.52Vp-p
20mV/5μsec /DIV

WF3 IC1-70



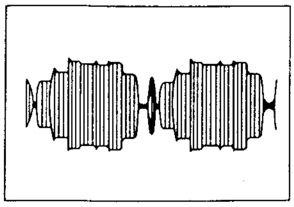
REC/PB 0.54Vp-p
20mV/20μsec /DIV

WF4 IC1-6



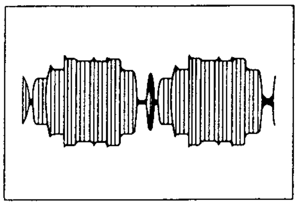
REC 0.4Vp-p
20mV/5msec/DIV

WF5 IC1-13



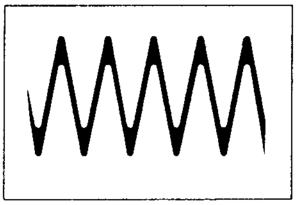
PB 0.6Vp-p
20mV/20μsec/DIV

WF6 IC1-15



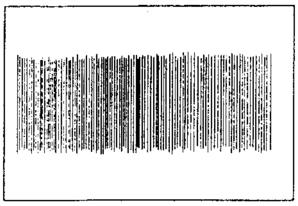
REC 0.4Vp-p
20mV/20μsec/DIV

WF7 IC1-34



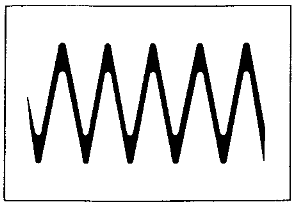
REC 1.7Vp-p
50mV/1msec/DIV

WF8 IC1-38



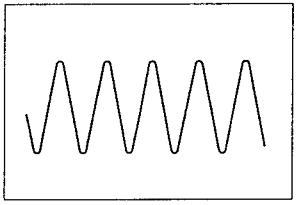
PB 0.01Vp-p
0.5mV/5msec/DIV

WF9 IC1-43



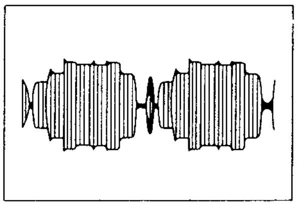
REC 0.22Vp-p
10mV/1msec/DIV

WF10 IC1-46



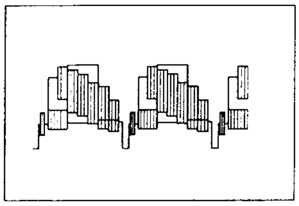
REC/PB 1.2Vp-p
50mV/1msec/DIV

WF11 IC1-55



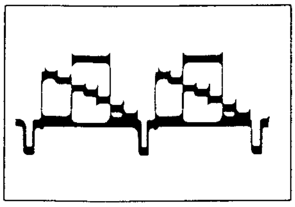
PB 0.6Vp-p
20mV/20μsec/DIV

WF12 IC1-57



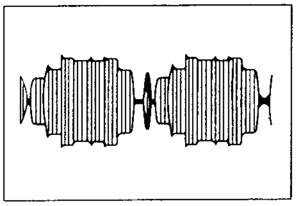
REC/PB 2.5Vp-p
0.1V/20μsec/DIV

WF13 IC2- 5



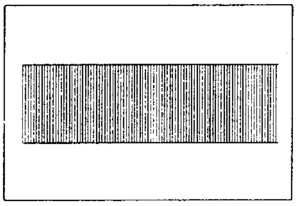
PB 0.48Vp-p
20mV/20μsec/DIV

WF14 IC2- 8



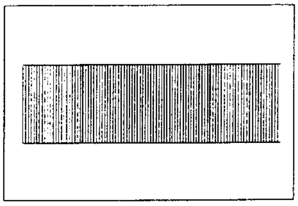
PB 0.4Vp-p
20mV/20μsec/DIV

WF15 TP333
A.ERASE



REC 33.0Vp-p
1V/1msec/DIV

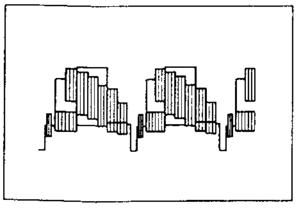
WF16 TP334
F.ERASE



REC 33.0Vp-p
1V/1msec/DIV

— ON SECREEN —

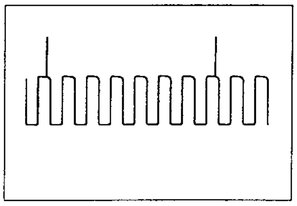
WF1 IC 1301-13,15



REC/PB2.1Vp-p
0.1 V/20μsec/DIV

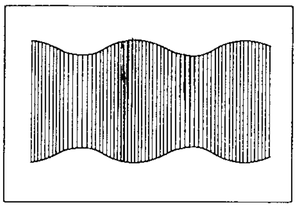
— SERVO —

WF1 IC 1101-22
D.PG/FG



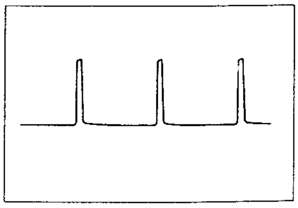
REC/PB4.0Vp-p
0.1V/5msec/DIV

WF2 IC 1101-17
CAP.FG



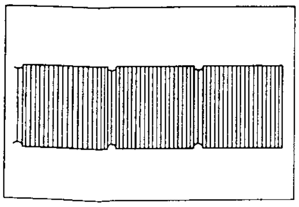
REC/PB3.4Vp-p
0.1V/10msec/DIV

WF3 IC 1101-2
C.SYNC



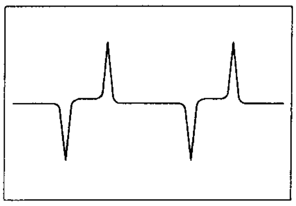
REC5.0Vp-p
0.2V/20μsec/DIV

WF4 IC 1101-3
FSC



REC/PB0.5Vp-p
20mV/5msec/DIV

WF5 IC 1101
CTL PULSE

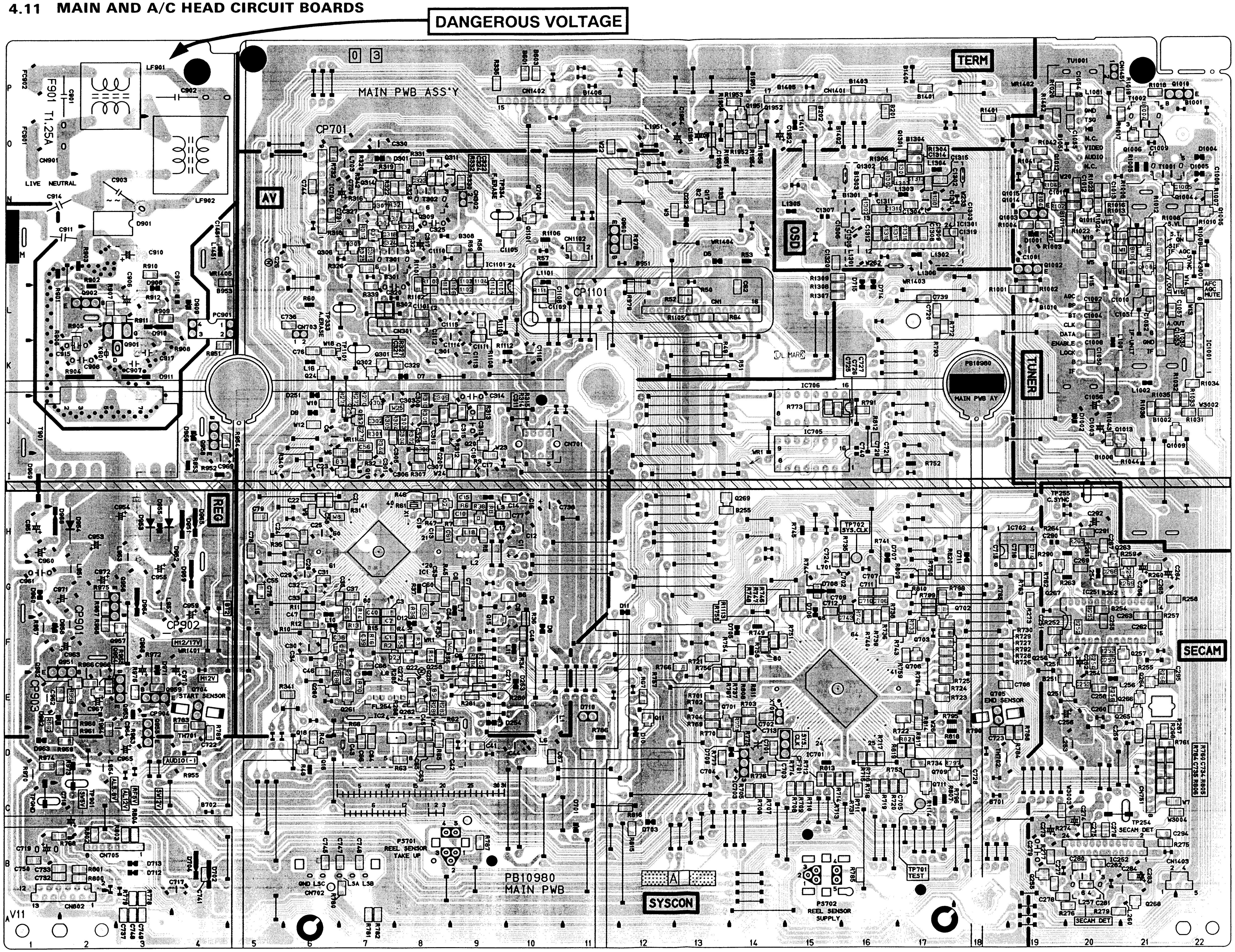


PB3.0Vp-p
0.1V/10msec/DIV

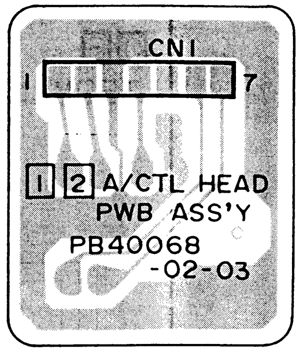
COMPONENT PARTS LOCATION GUIDE

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	7F
C2	B	C	7F
C3	B	C	7G
C5	B	C	8G
C6	A	D	6J
C7	B	C	9G
C8	B	C	9G
C9	A	D	10F
C10	B	C	9H
C11	A	D	10H
C12	A	D	10H
C13	B	C	8H
C14	B	C	10I
C15	B	C	9I
C16	A	D	10I
C17	A	D	9I
C18	B	C	9I
C19	B	C	8H
C20	B	C	8I
C21	B	C	6I
C22	B	C	6I
C23	A	D	6I
C24	B	C	6H
C25	A	D	6H
C26	A	D	6M
C28	B	C	6H
C29	A	D	6G
C30	A	D	6F
C31	B	C	6G
C32	A	D	6G
C33	B	C	6G
C34	B	C	6F
C35	B	C	7G
C36	B	C	7G
C37	B	C	7G
C38	B	C	7F
C39	B	C	7F
C40	B	C	7G
C41	B	C	9D
C42	B	C	8D
C43	B	C	7D
C44	A	D	10D
C45	B	C	8D
C46	B	C	6F
C47	B	C	6G
C48	B	C	10F
C53	B	C	8G
C54	A	D	8F
C55	A	D	5G
C56	B	C	7J
C58	B	C	6I
C60	B	C	8G
C61	B	C	8H
C62	B	C	14L
C63	B	C	8D
C64	B	C	7D
C65	B	C	8D
C66	B	C	7D
C67	B	C	10D
C68	B	C	7F
C75	B	C	5G
C76	B	C	6K
C77	B	C	9H
C78	B	C	5H
C79	B	C	5H
C251	B	C	20F
C252	A	D	20F
C253	B	C	20E
C254	B	C	20F
C255	B	C	20F
C256	A	D	20E
C257	B	C	20F
C258	B	C	20E
C259	B	C	21D
C260	B	C	20E
C262	B	C	21F
C263	B	C	21F
C264	A	D	21G
C265	B	C	21G
C266	A	D	21G
C267	B	C	20H
C268	B	C	20G
C269	B	C	20G
C270	B	C	7J
C271	B	C	9E
C272	A	D	8E
C273	A	D	19B
C274	A	D	20C
C275	B	C	20C
C276	B	C	20C
C277	B	C	19B
C278	B	C	19A
C279	A	D	19B
C280	B	C	20B
C281	B	C	20B
C282	B	C	20B
C283	A	D	21B
C284	B	C	21B
C290	A	D	19H
C291	B	C	20H
C292	A	D	20H
C294	B	C	21C
C295	B	C	21E
C301	A	D	7I
C302	B	C	7J
C303	A	D	7J
C304	B	C	8J
C305	B	C	7J
C306	A	D	8I
C307	B	C	8I
C308	A	D	8J
C309	B	C	8J
C310	A	D	8J
C311	B	C	8J
C313	A	D	9J
C314	A	D	9J
C315	A	D	9J
C317	A	D	8M
C318	B	C	7M
C319	B	C	7M
C320	A	D	7L
C321	B	C	7L
C322	A	D	8N
C323	B	C	8N
C324	B	C	8N
C325	A	D	8N
C326	B	C	8J
C327	A	D	7N
C329	B	C	8K
C330	A	D	7O
C701	A	D	14D
C702	B	C	14E
C703	B	C	14D
C704	A	D	14D
C705	B	C	17C
C706	B	C	16G
C707	B	C	16G
C708	B	C	18E
C709	B	C	16G
C710	B	C	16G
C711	B	C	16G
C712	B	C	15G
C713	B	C	14E
C714	B	C	19H
C715	B	C	18H
C716	B	C	19H
C717	A	D	4B
C718	A	D	2C
C719	A	D	1B
C720	B	C	17L
C721	B	C	16I
C722	B	C	4E
C723	B	C	18D
C724	B	C	15H
C725	B	C	15J
C726	B	C	15J
C727	B	C	16J
C728	A	D	18D
C729	B	C	16I
C730	A	D	7N
C731	B	C	6N
C732	B	C	1B
C733	B	C	1B
C734	B	C	21D
C735	B	C	21D
C736	B	C	6L
C737	B	C	3A
C738	A	D	10I
C739	B	C	17L
C740	A	D	16I
C741	B	C	4B
C742	A	D	15E
C743	B	C	16F
C744	B	C	6N
C745	B	C	6B
C746	B	C	7B
C747	B	C	7B
C748	B	C	3A
C749	B	C	3A
C750	B	C	1B
C751	A	D	15E
C901	A	D	2P
C902	A	D	3P
C903	A	D	2N
C906	A	D	3L
C907	A	D	3K
C908	A	D	2K
C910	A	D	2M
C911	A	D	2M
C914	A	D	2N
C915	A	D	2K
C916	A	D	4L
C917	A	D	3K
C951	A	D	1H
C953	A	D	2H
C954	A	D	3H
C955	A	D	3G
C959	A	D	4G
C960	A	D	1H
C961	A	D	1G
C962	B	C	2E
C963	A	D	1F
C964	A	D	3E
C965	A	D	3D
C966	A	D	2E
C967	A	D	2E
C968	A	D	3E
C969	A	D	4I
C970	A	D	4E
C971	A	D	1G
C972	A	D	2G
C1001	A	D	19M
C1002	B	C	20L
C1003	A	D	20J
C1004	B	C	20L
C1005	B	C	22N
C1006	A	D	22N
C1008	B	C	20L
C1009	B	C	21O
C1010	B	C	21M
C1011	B	C	20N
C1012	B	C	20N
C1013	B	C	20N
C1050	B	C	20K
C1051	B	C	21L
C1052	B	C	21L
C1053	B	C	21L
C1054	B	C	20P
C1055	B	C	20O
C1056	A	D	20J
C1057	B	C	21L
C1101	B	C	8L
C1102	B	C	9L
C1103	B	C	9M
C1104	B	C	9L
C1105	B	C	10M
C1106	B	C	9L
C1107	B	C	9L
C1108	B	C	10L
C1109	B	C	10L
C1110	B	C	9M
C1111	B	C	9L
C1112	A	D	9L
C1113	A	D	9K
C1114	A	D	9L
C1115	A	D	9L
C1116	A	D	10K
C1301	A	D	17N
C1302	B	C	17N
C1303	A	D	17N
C1304	B	C	17N
C1305	A	D	16N
C1306	B	C	16N
C1307	A	D	15N
C1308	B	C	17M
C1309	B	C	17M
C1310	B	C	16N
C1311	B	C	16N
C1312	B	C	16M
C1313	B	C	17N
C1314	B	C	17O
C1315	B	C	17N
C1316	B	C	17M
C1317	B	C	16M
C1318	B	C	16M
C1319	B	C	17M
C1320	B	C	15M
C1451	B	C	4N
C1951	A	D	13O
C1952	A	D	14O
C1953	B	C	13O
C1954	A	D	13O
CONNECTOR			
CN1	A	D	12L
CN301	A	D	7L
CN302	A	D	9N
CN701	A	D	10J
CN702	A	D	6B
CN703	A	D	6L
CN705	A	D	3B
CN751	A	D	21D
CN802	A	D	2A
CN901	A	D	1O
CN1102	A	D	11M
CN1401	A	D	16P
CN1402	A	D	11P
CN1403	A	D	22B
CN1451	A	D	20P
CIRCUIT PROTECTOR			
CP701	A	D	6O
CP901	A	D	2F
CP902	A	D	3F
CP903	A	D	1E
CP904	A	D	3E
CP1101	A	D	11M
DIODE			
D5	A	D	13M
D6	A	D	10G
D7	A	D	8K
D8	A	D	10F
D9	A	D	6J
D10	A	D	12E
D11	A	D	11G
D12	A	D	8F
D251	A	D	6K
D252	A	D	13M
D253	A	D	10E
D254	A	D	9E
D301	A	D	7O
D701	A	D	11C
D702	A	D	4B
D703	A	D	12C
D704	A	D	4B
D705	A	D	14F
D706	A	D	15G
D707	A	D	16H
D708	A	D	15G
D709	A	D	14D
D710	A	D	11E
D711	A	D	18G
D712	A	D	3B
D713	A	D	3B
D714	A	D	16M
D715	A	D	16M
D901	B	C	2N
D908	A	D	3L
D909	A	D	4L
D910	A	D	4L
D911	A	D	3K
D951	A	D	4I
D952	A	D	3I
D953	A	D	3I
D954	A	D	2I
D955	A	D	3H
D956	A	D	4J
D958	A	D	1F
D959	A	D	4H
D960	A	D	1G
D962	A	D	1E
D963	A	D	1D
D964	A	D	3G
D965	A	D	4I
D968	A	D	1H
D969	A	D	1I
D971	A	D	3F
D1001	A	D	19M
D1002	A	D	20J
D1004	A	D	22O
D1005	A	D	22N
FUSE			
F901	A	D	1O
IC			
IC1	B	C	7H
IC2	B	C	8D
IC251	A	D	20G
IC252	A	D	21B
IC701	B	C	15E
IC702	A	D	18H
IC703	A	D	14D
IC704	A	D	6N
IC705	A	D	16I
IC706	A	D	16J
IC1001	A	D	22K
IC1101	A	D	10L
IC1301	A	D	17M
COIL			
L1	A	D	10D
L2	A	D	9H
L3	A	D	9I
L4	A	D	6I
L5	A	D	7F
L6	A	D	10D
L7	A	D	9F
L8	A	D	7E
L9	A	D	7I
L10	A	D	6G
L11	A	D	10F
L15	A	D	5G
L16	A	D	6K
L17	A	D	10H
L18	B	C	9H
L253	A	D	20D
L254	A	D	20G
L256	A	D	21E
L257	A	D	20B
L260	A	D	21A
L301	A	D	8K
L701	A	D	15G
L702	A	D	16G
L703	A	D	7O
L951	A	D	2G
L952	A	D	3G
L953	A	D	3G
L954	A	D	2D
L1001	A	D	20K
L1002	A	D	21K
L1081	B	C	20P
L1101	A	D	10M
L1301	A	D	16M
L1302	A	D	17M
L1303	A	D	17N
L1304	A	D	17O
L1305	A	D	15N
L1306	A	D	17M
L1411	A	D	15O
L1451	A	D	4M
L1951	A	D	12O
TRANSISTOR			
Q1	B	C	9H
Q8	B	C	9F
Q9	B	C	7F
Q11	B	C	12E
Q15	B	C	9F
Q16	B	C	6D
Q17	B	C	13N
Q18	B	C	6D
Q19	B	C	7I
Q20	B	C	9J
Q21	B	C	8I
Q22	B	C	8F
Q23	B	C	8F
Q24	B	C	6K
Q251	B	C	20E
Q252	B	C	7J
Q253	B	C	7J
Q254	B	C	21G
Q255	B	C	19B
Q256	B	C	19F
Q257	B	C	21F
Q258	B	C	9F
Q259	B	C	9E
Q260	B	C	6E
Q261	B	C	7E
Q262	B	C	8E
Q263	B	C	20G
Q264	B	C	21E
Q265	B	C	21E
Q266	B	C	21E
Q267	B	C	19G
Q268	B	C	21A
Q269	B	C	13I
Q301	B	C	7K
Q302	B	C	7K
Q303	B	C	7J
Q304	B	C	7N
Q305	B	C	7M
Q306	B	C	7M
Q307	B	C	7N
Q308	B	C	7N
Q309	B	C	8N
Q310	B	C	7M
Q311	B	C	8O
Q314	B	C	7N
Q701	B	C	13E
Q702	B	C	17G
Q703	B	C	17F
Q704	A	D	4E
Q705	A	D	18E
Q706	B	C	17F
Q708	B	C	10N
Q709	B	C	18D
Q711	B	C	17C
Q901	A	D	2L
Q902	A	D	2L
Q951	A	D	1F
Q952	B	C	2E
Q953	A	D	3E
Q954	B	C	2E
Q955	A	D	3D
Q956	A	D	2G
Q957	B	C	3F
Q958	A	D	4J
Q959	A	D	3E
Q960	A	D	11M
Q1002	A	D	19M
Q1003	A	D	19N
Q1004	B	C	21N
Q1005	B	C	22N
Q1006	B	C	21O
Q1007	B	C	21M
Q1008	B	C	21M
Q1009	B	C	22J
Q1010	A	D	22P
Q1011	B	C	20N
Q1012	B	C	19O
Q1013	B	C	21J
Q1014	B	C	19N
Q1015	B	C	19N
Q1101	B	C	10N
Q1301	B	C	17O
Q1302	B	C	16N
Q1951	B	C	14P
Q1952	B	C	14O
RESISTOR			
R1	B	C	8F
R2	B	C	7F
R3	B	C	8F
R4	B	C	7F
R5	B	C	9H
R6	B	C	9I
R7	B	C	9H
R8	B	C	9H
R9	B	C	9I
R10	B	C	6F
R11	B	C	6G
R12	B	C	6F
R13	B	C	7F
R14	B	C	7G
R15	B	C	7F
R16	B	C	7F
R30	B	C	8F
R31	B	C	7I
R32	B	C	7I
R33	B	C	13N
R34	B	C	10F
R35	B	C	6H
R36	B	C	10F
R37	A	D	8G
R38	B	C	9H
R39	B	C	8G
R42	B	C	6D
R45	B	C	8G
R46	B	C	8I
R47	B	C	8H
R48	A	D	6D
R49	B	C	13K
R50	B	C	13L
R51	B	C	13K
R52	B	C	13L
R53	A	D	14M
R54	B	C	8F
R55	B	C	8F
R56	B	C	8F
R57	A	D	10M
R58	B	C	9M
R59	B	C	9M
R60	A	D	6L
R61	B	C	8I
R62	B	C	9E
R63	B	C	8D
R64	B	C	13L
R65	B	C	8D
R66	B	C	7D
R67	B	C	12E
R70	B	C	7E
R251	B	C	20F
R252	B	C	19F
R253	B	C	20F
R254	B	C	20F
R255	B	C	21E
R256	B	C	20E
R257	B	C	21F
R258	B	C	21G
R259	B	C	21G
R260	B	C	21G
R261	B	C	20H
R262	B	C	20G
R263	A	D	20G
R264	B	C	20H
R265	B	C	20H
R266	B	C	21E
R267	B	C	21D
R268	B	C	21D
R269	B	C	21G
R270	B	C	7J
R271	B	C	7J
R272	B	C	7J
R273	B	C	19G
R274	B	C	20C
R275	B	C	21B
R276	B	C	20A
R277	B	C	19B
R279	B	C	20A
R280	B	C	9E
R281	B	C	9E
R282	B	C	9F
R283	B	C	8E
R284	B	C	9F
R285	B	C	8E
R286	B	C	6E
R287	B	C	7E
R288	B	C	8E
R289	B	C	8E
R290	A	D	20H
R301	B	C	7J
R302	B	C	8J
R303	B	C	8J
R304	B	C	8J
R305	B	C	7J
R307	B	C	8I
R308	B	C	8J
R309	B	C	8J
R310	B	C	8J
R312	B	C	8J
R313	B	C	9J
R314	B	C	9J
R315	B	C	9J
R316	B	C	7N
R317	B	C	7M
R318	B	C	7M
R319	B	C	7N
R320	B	C	8O
R321	B	C	7N
R322	B	C	7N
R323	B	C	8M
R324	B	C	7M
R325	B	C	7M
R326	B	C	7M
R327	B	C	7L
R328	B	C	8N
R329	B	C	8N
R330	B	C	9N
R331	B	C	8O
R332	B	C	8N
R335	B	C	9P
R339	B	C	7L
R340	B	C	6I
R341	B	C	6E
R342	B	C	7N
R344	B	C	7J
R701	B	C	13E
R702	B	C	13E
R703	B	C	14E
R704	B	C	13E
R705	B	C	14C
R706	B	C	14C
R707	B	C	14C
R708	B	C	15C
R709	B	C	15C
R710	B	C	15C
R711	B	C	16C
R712	B	C	15D
R713	B	C	15D
R714	B	C	15D
R715	B	C	16D
R716	B	C	16D
R717	B	C	16D
R718	B	C	16C
R719	B	C	16C
R720	B	C	16C
R721	B	C	13F
R722	B	C	17E
R723	B	C	17E
R724	B	C	17E
R725	B	C	17E
R726	B	C	17F
R727	B	C	17F
R728	B	C	17F
R729	B	C	17F
R730	B	C	17F
R731	B	C	16D
R732	B	C	6O
R733	B	C	17F
R734	B	C	17D
R735	B	C	16H
R736	B	C	16F
R737	B	C	14E
R738	B	C	16G
R739	B	C	16F
R740	B	C	16F
R741	B	C	16G
R742	B	C	16F
R743	B	C	17F
R744	B	C	15G
R745	A	D	15H
R746	B	C	15G
R747	B	C	15G
R748	B	C	15G
R749	A	D	14F
R750	B	C	17G
R751	B	C	14F
R752	A	D	17I
R753	B	C	17D
R754	B	C	14F
R755	B	C	14F
R756	B	C	13F
R757	B	C	13E
R758	A	D	14F
R759	B	C	17F
R760	B	C	21D
R761	B	C	21D
R762	B	C	19G
R763	B	C	19G
R764	B	C	21D
R765	B	C	17G
R766	B	C	13F
R767	B	C	13E
R768	B	C	1C
R769	B	C	13E
R770	B	C	13D
R771	B	C	14E
R772	B	C	17L
R773	B	C	15J
R774	B	C	14D
R775	B	C	14D
R776	B	C	14D
R777	B	C	13D
R778	B	C	3A
R779	B	C	3A
R780	B	C	7B
R781	B	C	7A
R782	B	C	7A
R783	B	C	4E
R784	B	C	19D
R785	B	C	16B
R786	A	D	11D
R787	B	C	9B
R788	B	C	19D
R789	B	C	4D
R790	A	D	18D
R791	B	C	16J
R792	B	C	17F
R793	B	C	17L
R794	B	C	17E
R795	A	D	18E
R796	B	C	18C
R797	B	C	17D
R798	B	C	17G
R799	B	C	17G
R800	B	C	2B
R801	B	C	2B
R802	B	C	2C
R803	B	C	3C
R804	B	C	3C
R805	B	C	21C
R806	B	C	21C
R807	A	D	17C
R808	B	C	14E
R809	B	C	17G
R810	B	C	17G
R811	B	C	14E
R812	B	C	16J
R813	A	D	15D
R814	B	C	17E
R815	B	C	12C
R816	B	C	12C
R817	B	C	17D
R818	A	D	18D
R819	B	C	17D
R820	B	C	17G
R821	B	C	17D
R901	A	D	1M
R902	A	D	2L
R903	A	D	2M
R904	A	D	2K
R905	A	D	2L
R906	B	C	2K
R907	B	C	2L
R908	A	D	4K
R909	B	C	3L
R910	B	C	3M
R911	B	C	3L
R912	A	D	3L
R951	B	C	4K
R952	A	D	5I
R953	A	D	4I
R954	B	C	4J
R955	A	D	4D
R957	A	D	1F
R958	B	C	2E
R959	B	C	2D
R960	B	C	2E
R961	B	C	2D
R962	B	C	1E
R963	A	D	3E
R964	B	C	2D
R965	B	C	2E
R966	B	C	2E
R967	B	C	2G
R968	B	C	2F
R970	A	D	1C
R972	B	C	3E
R973	B	C	2D
R974	B	C	1D
R975	B	C	2G
R976	B	C	3E
R978	B	C	12M
R979	B	C	12L
R1001	B	C	19L
R1002	B	C	19L
R1003	B	C	19N
R1004	B	C	19N
R1005	A	D	21N
R1006	A	D	21N
R1007	B	C	22N
R1008	B	C	22N
R1009	B	C	22M
R1010	B	C	22N
R1012	B	C	21N
R1013	B	C	21M
R1016	B	C	21M
R1017	B	C	21P
R1018	B	C	21P
R1019	B	C	21P
R1020	B	C	19P
R1021	B	C	19N
R1022	B	C	20N
R1023	B	C	20N
R1024	B	C	20N
R1030	B	C	22K
R1031	B	C	22J
R1032	B	C	22J
R1033	B	C	22J
R1034	B	C	22K
R1035	B	C	21J
R1036	B	C	21J
R1041	B	C	19N
R1042	B	C	19O
R1043	B	C	20J
R1044	B	C	21I
R1045	B	C	19N
R1046	B	C	19N
R1101	B	C	8M
R1102	B	C	8L
R1103	B	C	8M
R1104	B	C	9M
R1105	B	C	13L
R1106	A	D	10M
R1107	B	C	8L
R1108	B	C	9L
R1109	B	C	9L
R1110	B	C	10L
R1111	B	C	10L
R1112	A	D	10K
R1113	B	C	14F
R1114	A	D	17C
R1301	B	C	17N
R1302	B	C	16N
R1303	B	C	17N
R1304	B	C	17O
R1305	B	C	17O
R1306	B	C	16O
R1307	B	C	15L
R1308	B	C	15L
R1309	B	C	15M
R1401	B	C	18O
R1402	B	C	19P
R1951	B	C	13O
R1952	B	C	14O
R1953	B	C	14P
R1954	B	C	14O
R1955	B	C	14O
R1956	B	C	13O
TEST POINT			
TP254	A	D	21C
TP255	A	D	20I
TP333	A	D	7L
TP334	A	D	9N
TP701	A	D	17C
TP702	A	D	16H
TP901	A	D	2C
TP1101	A	D	7L
TPGND	A	D	1C
OTHERS			
CF701	A	D	15D
FL254	A	D	8E
IF-UNIT	A	D	21K
K901	A	D	2K
LF901	A	D	2P
LF902	A	D	4O
PC901	A	D	5L
PS701	A	D	9B
PS702	A	D	15B
T301	A	D	7M
T302	A	D	8N
T901	A	D	1K
T1001	A	D	22N
T1002	A	D	21O
TH701	A	D	4D
TH702	A	D	18D
TU1001	A	D	20P
WR1	A	D	14I
X1	A	D	8I
X701	A	D	14E

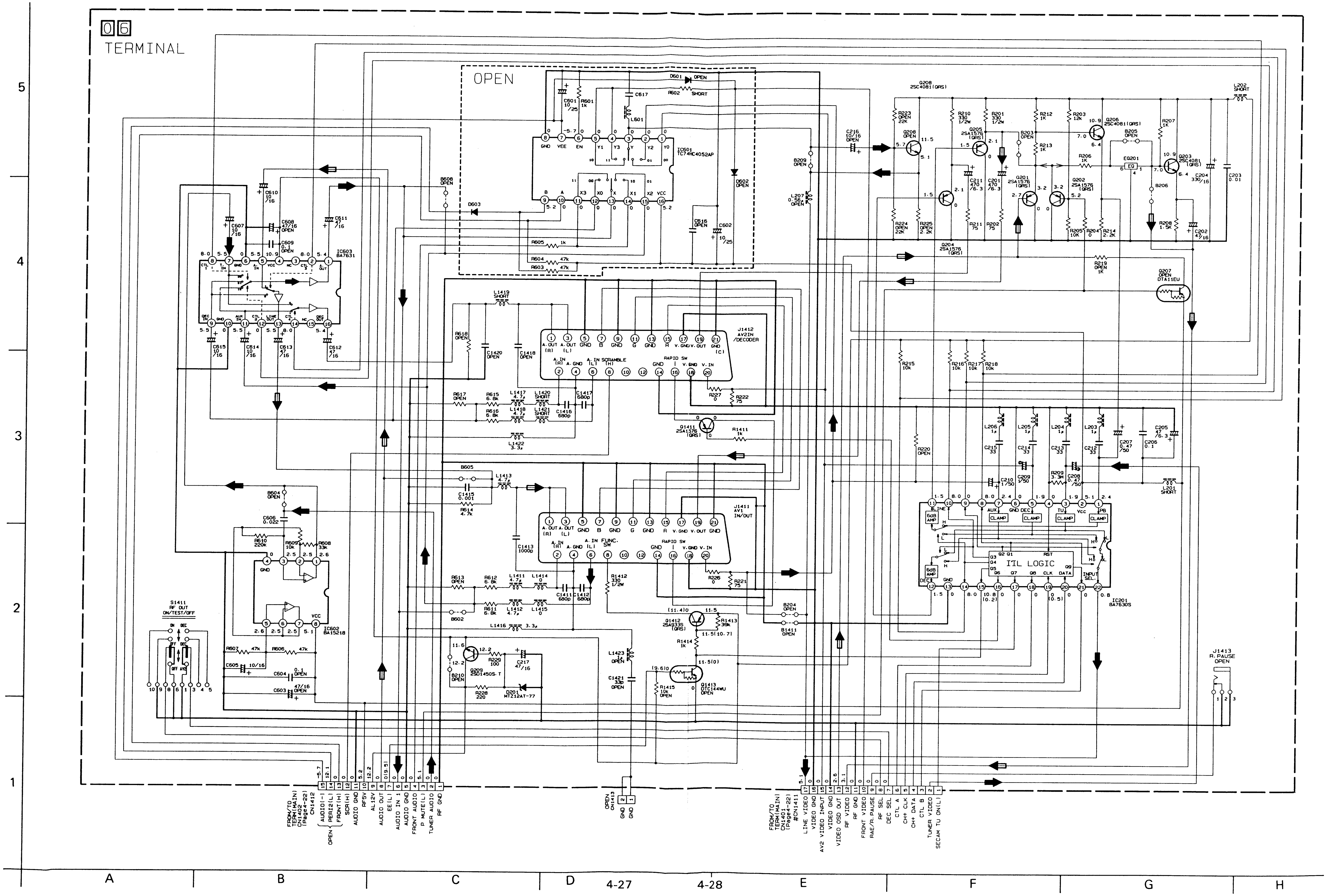
4.11 MAIN AND A/C HEAD CIRCUIT BOARDS


DANGEROUS VOLTAGE
MAIN PWB ASS'Y
PB10980
MAIN PWB
TERM
AV
OSD
TUNER
REG
SECAM
SYSCON
F901 T1.25A
LIVE NEUTRAL
CP701
CP1101
CP901
CP902
CP903
IC705
IC706
IC701
IC702
START SENSOR
END SENSOR
PS701
REEL SENSOR TAKE UP
PS702
REEL SENSOR SUPPLY
TP701 TEST
TP702 SYS.CLK
TP255 C.SYNC
TP254 SECAM DET
SECAM DET
AFC AGC MUTE
M12V
M12/17V
AUDIO1-1
DL MARK
PB10980 MAIN PWB AY
V11
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A

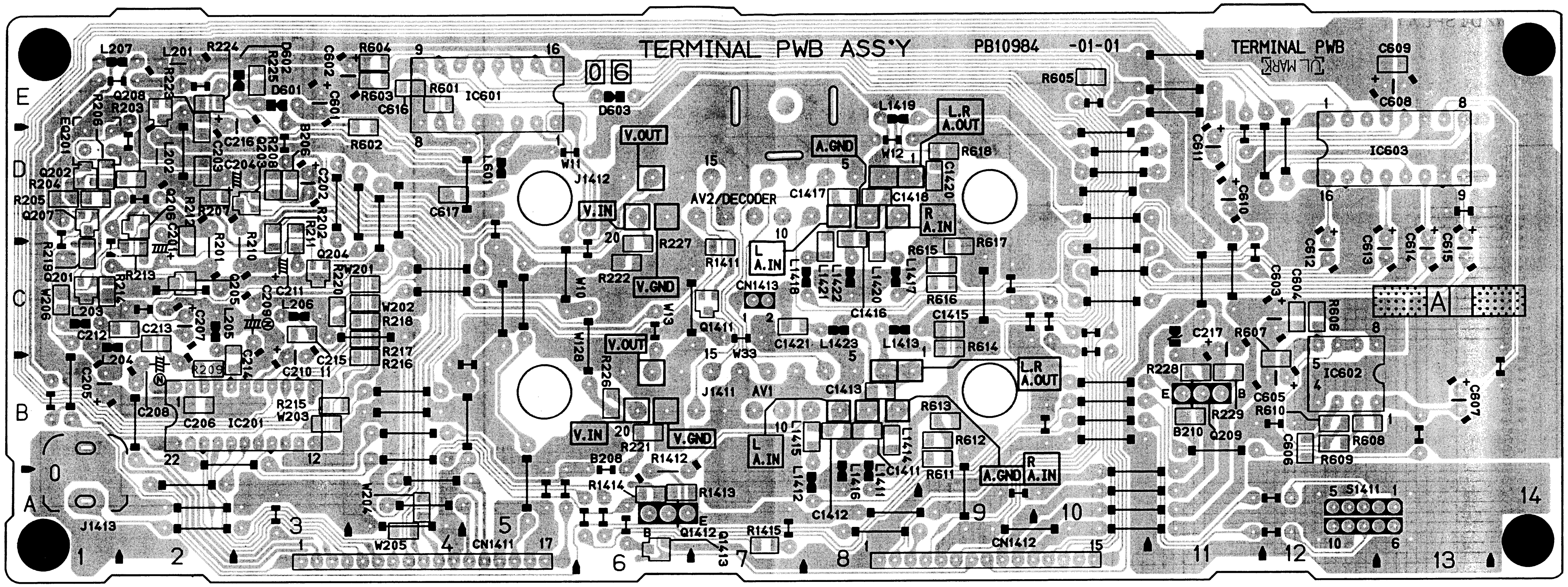
-A/C HEAD-


CN1
1
7
1 2 A/CTL HEAD PWB ASS'Y
PB40068 -02-03

4.12 TERMINAL SCHEMATIC DIAGRAM


06
TERMINAL
OPEN
IC601 TC74HC4052AP
IC603 BA7631
IC602 BA15218
IC201 BA7630S
ITL LOGIC
J1412 AV2IN /DECODER
J1411 AV1 IN/OUT
J1413 R.PAUSE OPEN
S1411 RF OUT ON/TEST/OFF
Q208 2SC4081(QRS)
Q205 2SA1576 (QRS)
Q206 2SC4081(QRS)
Q203 2SC4081 (QRS)
Q201 2SA1576 (QRS)
Q202 2SA1576 (QRS)
Q204 2SA1576 (QRS)
Q207 OPEN DTA11EU
Q1411 2SA1576 (QRS)
Q1412 2SA933S (QRS)
Q1413 DTC144WU OPEN
Q209 2SD1450S-T
D201 MTZ12AT-77
D601 OPEN
D602 OPEN
D603
L202 SHORT
L201 SHORT
L1419 SHORT
L1416 3.3μ
L1422 3.3μ
FROM/TO TERM(MAIN) CN1402 (Page4-22) CN1412
AUDIO(-) PERI2(L) FRONT(H) SCR(H)
OPEN
AUDIO GND
RF5V
AL12V
AUDIO OUT
EE(L)
AUDIO IN 1
AUDIO GND
FRONT AUDIO
P MUTE(L)
TUNER AUDIO
RF GND
OPEN CN1413
GND
GND
FROM/TO TERM(MAIN) CN1401 (Page4-22) #CN1411
LINE VIDEO
VIDEO GND
AV2 VIDEO INPUT
VIDEO GND
VIDEO OSD OUT
RF VIDEO
RF GND
FRONT VIDEO
RAE/R.PAUSE
RF SEL
DEC SEL
CTL A
CH+ CLK
CH+ DATA
CTL B
TUNER VIDEO
SECAM TU ON(L)
1
2
3
4
5
A
B
C
D
E
F
G
H

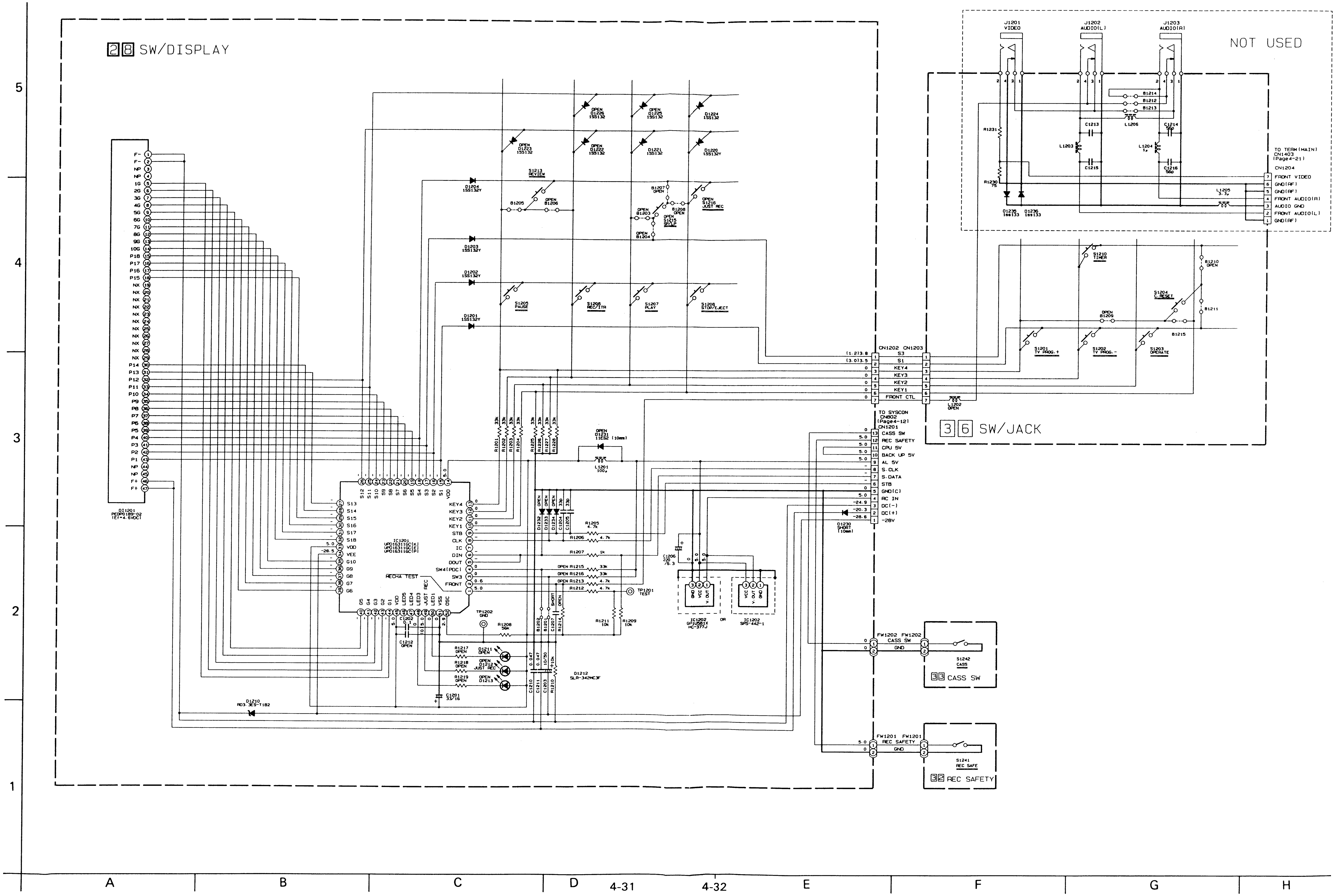
4.13 TERMINAL CIRCUIT BOARD


TERMINAL PWB ASS'Y
PB10984 -01-01
TERMINAL PWB
06
IC601
IC603
IC602
IC201
AV2/DECODER
AV1
V.OUT
V.IN
V.GND
A.GND
L.R A.OUT
R A.IN
L A.IN
CN1411
CN1412
CN1413
J1411
J1412
J1413
S1411
EQ201
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
11
12
13
14

COMPONENT PARTS LOCATION GUIDE <TERMINAL PWB>

REF.No.	LOCATION		
CAPACITOR			
C201	A	D	2C
C202	A	D	3D
C203	B	C	2D
C204	A	D	2D
C205	A	D	1B
C206	B	C	2B
C207	A	D	2C
C208	A	D	2B
C209	A	D	3C
C210	A	D	3B
C211	A	D	3C
C212	B	C	2C
C213	B	C	2C
C214	B	C	2B
C215	B	C	3C
C216	A	D	2D
C217	A	D	11B
C601	A	D	3E
C602	A	D	3E
C603	A	D	12C
C604	B	C	12C
C605	A	D	12B
C606	B	C	12B
C607	A	D	13B
C608	A	D	13E
C609	B	C	13E
C610	A	D	11D
C611	A	D	11D
C612	A	D	12C
C613	A	D	13C
C614	A	D	13C
C615	A	D	13C
C616	B	C	4E
C617	B	C	4D
C1411	B	C	8B
C1412	B	C	8B
C1413	B	C	8B
C1415	B	C	9C
C1416	B	C	8C
C1417	B	C	8D
C1418	B	C	8D
C1420	B	C	9D
C1421	B	C	7C
CONNECTOR			
CN1411	A	D	3A
CN1412	A	D	8A
CN1413	A	D	7C
DIODE			
D201	A	D	11C
D601	A	D	3E
D602	A	D	3E
D603	A	D	6E
IC			
IC201	A	D	2B
IC601	A	D	5D
IC602	A	D	12B
IC603	A	D	12D
COIL			
L201	A	D	2E
L202	A	D	2D
L203	A	D	1C
L204	A	D	1C
L205	A	D	2C
L206	A	D	3C
L207	A	D	1E
L601	A	D	5D
L1411	A	D	8B
L1412	A	D	8B
L1413	A	D	8C
L1414	B	C	8B
L1415	B	C	8B
L1416	A	D	8B
L1417	A	D	8C
L1418	A	D	8C
L1419	A	D	8E
L1420	B	C	8C
L1421	B	C	8C
L1422	A	D	8C
L1423	A	D	8C
TRANSISTER			
Q201	B	C	1C
Q202	B	C	1D
Q203	B	C	3D
Q204	B	C	3C
Q205	B	C	2C
Q206	B	C	2D
Q207	B	C	1D
Q208	B	C	2E
Q209	A	D	11B
Q1411	B	C	7C
Q1412	A	D	6A
Q1413	B	C	6A
RESISTOR			
R201	A	D	2D
R202	B	C	3C
R203	B	C	2D
R204	B	C	1D
R205	B	C	1D
R206	B	C	1D
R207	B	C	2D
R208	B	C	3D
R209	B	C	2B
R210	A	D	3D
R211	B	C	3C
R212	B	C	2C
R213	B	C	2C
R214	B	C	1C
R215	B	C	3B
R216	B	C	4B
R217	B	C	4C
R218	B	C	4C
R219	B	C	1C
R220	B	C	3C
R221	B	C	6B
R222	B	C	6C
R223	B	C	2D
R224	B	C	2E
R225	B	C	3E
R226	B	C	6B
R227	B	C	6C
R228	B	C	11B
R229	B	C	11B
R601	B	C	4E
R602	B	C	4D
R603	B	C	4E
R604	B	C	4E
R605	B	C	10E
R606	B	C	12C
R607	B	C	12B
R608	B	C	12B
R609	B	C	12B
R610	B	C	12B
R611	B	C	9B
R612	B	C	9B
R613	B	C	9B
R614	B	C	9C
R615	B	C	9C
R616	B	C	9C
R617	B	C	9C
R618	B	C	9D
R1411	B	C	7C
R1412	A	D	6A
R1413	B	C	6A
R1414	B	C	6A
R1415	B	C	7A
OTHERS			
EQ201	A	D	1D
J1411	A	D	7B
J1412	A	D	7D
J1413	A	D	1A
S1411	A	D	12A

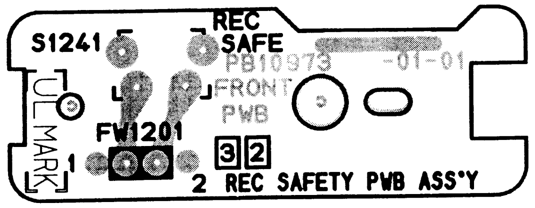
4.14 SW/DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW SCHEMATIC DIAGRAMS



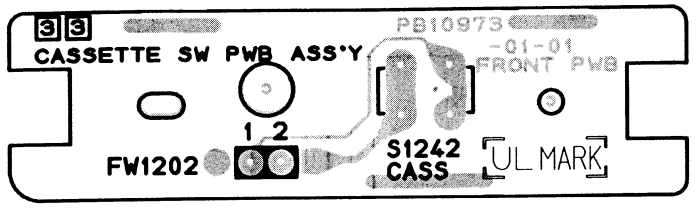
28 SW/DISPLAY
36 SW/JACK
33 CASS SW
32 REC SAFETY
NOT USED
J1201 VIDEO
J1202 AUDIO(L)
J1203 AUDIO(R)
TO TERM(MAIN) CN1403 (Page4-21)
CN1204
FRONT VIDEO
GND(RF)
FRONT AUDIO(R)
AUDIO GND
FRONT AUDIO(L)
CN1202 CN1203
S3
S1
KEY4
KEY3
KEY2
KEY1
FRONT CTL
TO SYSCON CN802 (Page4-12)
CN1201
CASS SW
REC SAFETY
CPU 5V
BACK UP 5V
AL 5V
S.CLK
S.DATA
STB
GND(C)
RC IN
DC(-)
DC(+)
-28V
IC1201 UPD16311GC(K) UPD16311GC(E) UPD16311GC(P)
DI1201 PEDP0189-02 (Ef=4.6VDC)
S1213 REVIEW
S1216 JUST REC
S1215 SEARCH
S1205 PAUSE
S1206 REC/ITR
S1207 PLAY
S1208 STOP/EJECT
S1210 TIMER
S1204 C.RESET
S1201 TV PROG.+
S1202 TV PROG.-
S1203 OPERATE
IC1202 GP1U58IX HC-377J
OR
IC1202 SPS-442-1
D1212 SLA-342MC3F
D1210 RD3.3ES-T1B2
TP1201 TEST
TP1202 GND
FW1202 FW1202 CASS SW GND
S1242 CASS
FW1201 FW1201 REC SAFETY GND
S1241 REC SAFE
RECHA TEST
1
2
3
4
5
A
B
C
D
E
F
G
H

4.15 SW/DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW CIRCUIT BOARDS

— REC SAFETY —


S1241
REC SAFE
PB10973 -01-01
FRONT PWB
UL MARK
FW1201
1
2
3 2
REC SAFETY PWB ASS'Y

— CASSETTE SW —

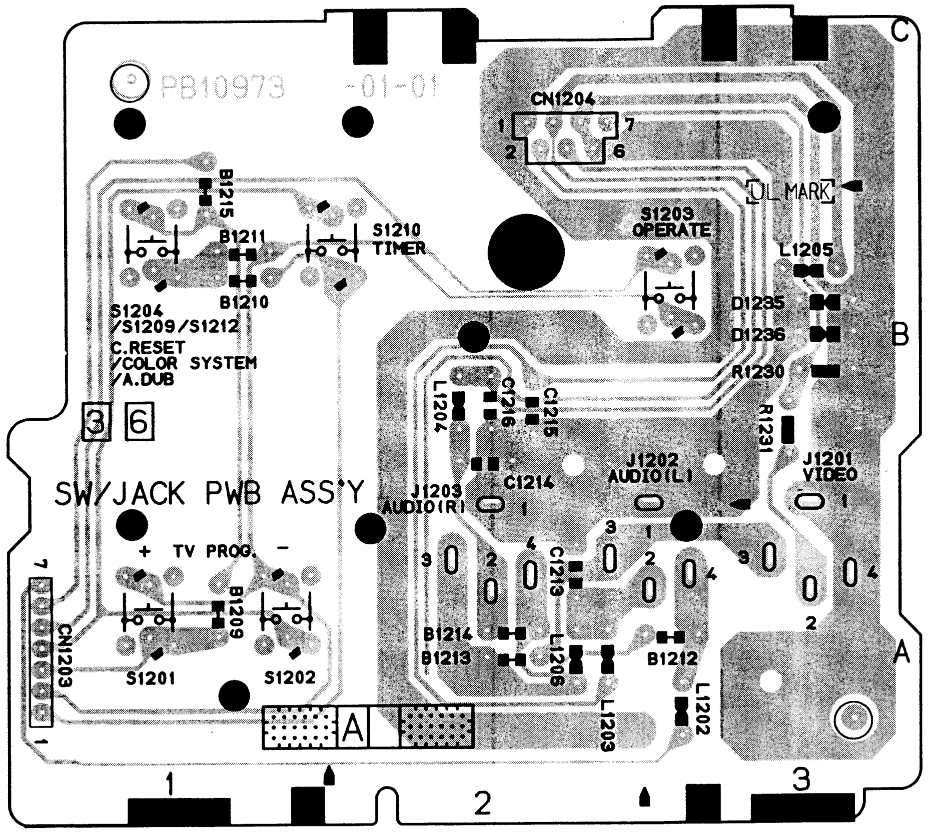

3 3
CASSETTE SW PWB ASS'Y
PB10973 -01-01
FRONT PWB
1 2
FW1202
S1242 CASS
UL MARK

— SW/JACK —

COMPONENT PARTS LOCATION GUIDE <SW/JACK PWB>

REF.No.	LOCATION		
CAPACITOR			
C1213	A	D	2A
C1214	A	D	2B
C1215	A	D	2B
C1216	A	D	2B
CONNECTOR			
CN1203	A	D	1A
CN1204	A	D	2C
DIODE			
D1235	A	D	3B
D1236	A	D	3B
COIL			
L1202	A	D	3A
L1203	A	D	2A
L1204	A	D	2B
L1205	A	D	3B
L1206	A	D	2A
RESISTOR			
R1230	A	D	3B
R1231	A	D	3B

REF.No.	LOCATION		
OTHERS			
J1201	A	D	3A
J1202	A	D	3A
J1203	A	D	2A
S1201	A	D	1A
S1202	A	D	1A
S1203	A	D	3B
S1204	A	D	1B
S1210	A	D	2B


PB10973 -01-01
CN1204
1 7
2 6
C
UL MARK
B1215
B1211
S1210 TIMER
S1203 OPERATE
L1205
D1235
D1236
B
R1230
B1210
S1204 /S1209/S1212
C.RESET /COLOR SYSTEM /A.DUB
3 6
L1204
C1216
C1215
R1231
SW/JACK PWB ASS'Y
J1203 AUDIO(R)
C1214
J1202 AUDIO(L)
J1201 VIDEO
+ TV PROG. −
B1209
C1213
CN1203
7
1
B1214
B1213
L1206
B1212
S1201
S1202
L1203
L1202
A
1
2
3

— SW/DISPLAY —

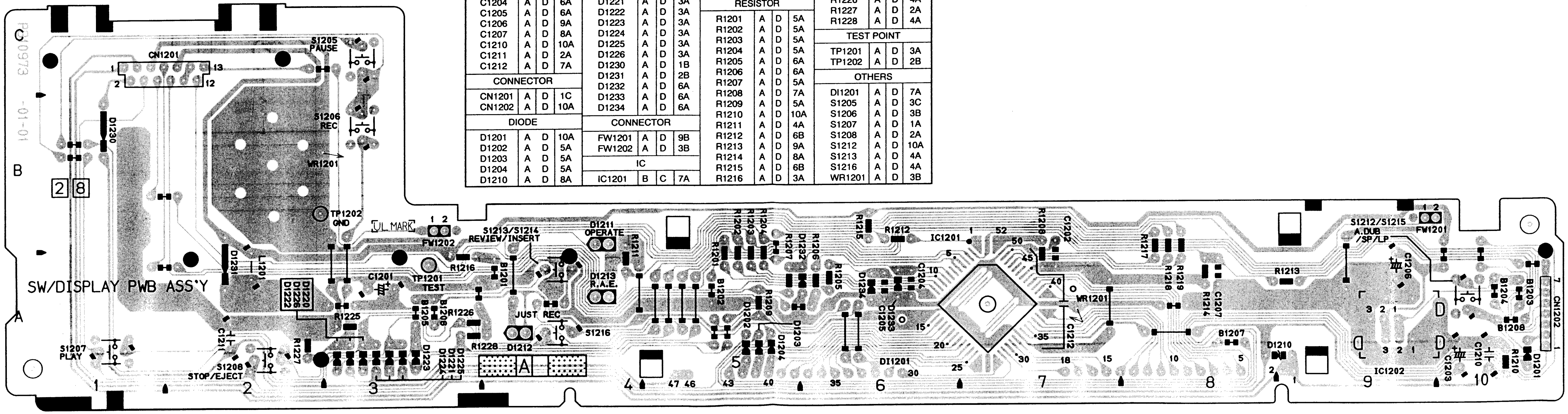
COMPONENT PARTS LOCATION GUIDE <SW/DISPLAY PWB>

REF.No.	LOCATION		
CAPACITOR			
C1201	A	D	3A
C1202	A	D	7A
C1203	A	D	10A
C1204	A	D	6A
C1205	A	D	6A
C1206	A	D	9A
C1207	A	D	8A
C1210	A	D	10A
C1211	A	D	2A
C1212	A	D	7A
CONNECTOR			
CN1201	A	D	1C
CN1202	A	D	10A
DIODE			
D1201	A	D	10A
D1202	A	D	5A
D1203	A	D	5A
D1204	A	D	5A
D1210	A	D	8A

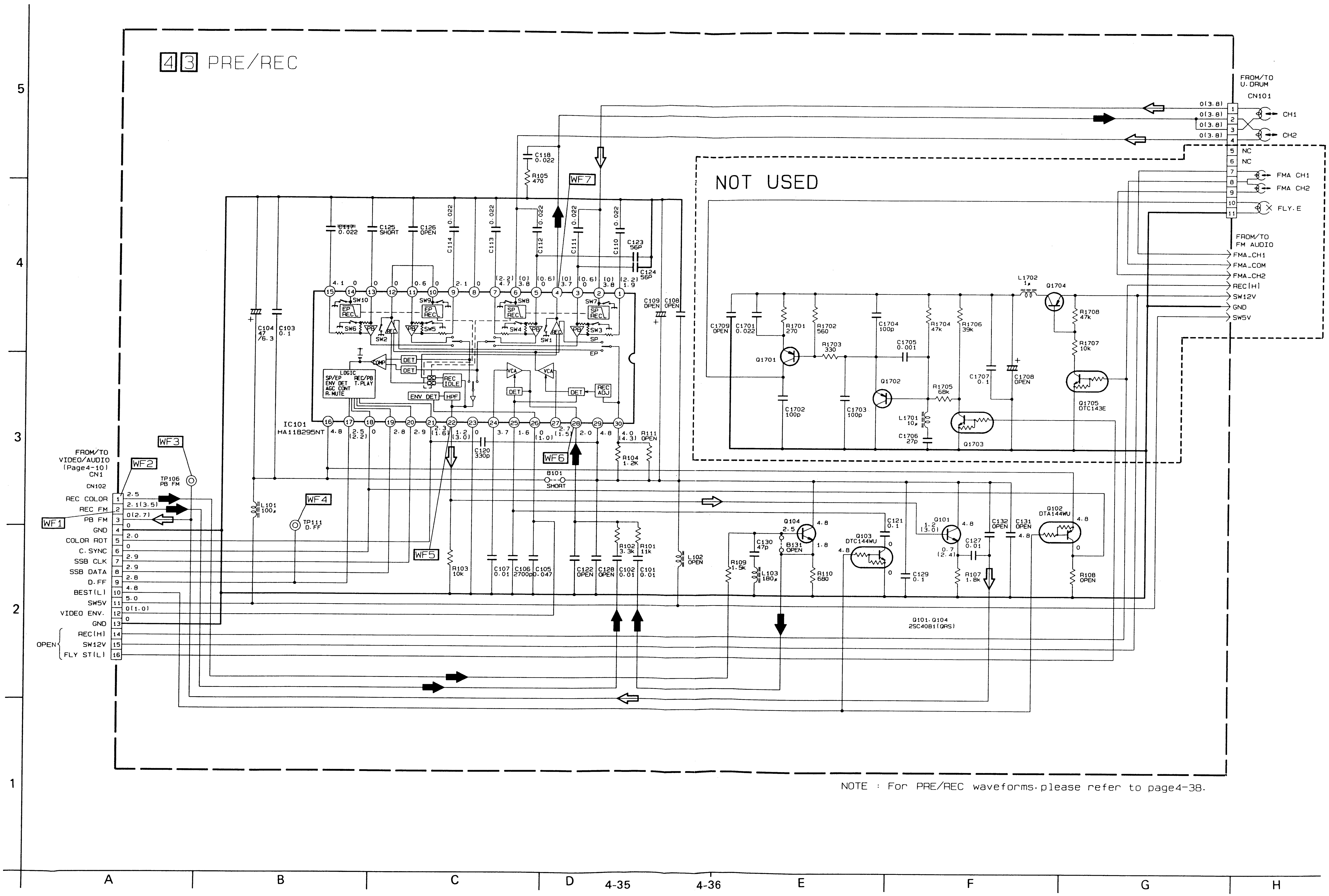
REF.No.	LOCATION		
D1211	A	D	4B
D1212	A	D	4A
D1213	A	D	4A
D1220	A	D	3A
D1221	A	D	3A
D1222	A	D	3A
D1223	A	D	3A
D1224	A	D	3A
D1225	A	D	3A
D1226	A	D	3A
D1230	A	D	1B
D1231	A	D	2B
D1232	A	D	6A
D1233	A	D	6A
D1234	A	D	6A
CONNECTOR			
FW1201	A	D	9B
FW1202	A	D	3B
IC			
IC1201	B	C	7A

REF.No.	LOCATION		
IC1202	A	D	9A
COIL			
L1201	A	D	2A
RESISTOR			
R1201	A	D	5A
R1202	A	D	5A
R1203	A	D	5A
R1204	A	D	5A
R1205	A	D	6A
R1206	A	D	6A
R1207	A	D	5A
R1208	A	D	7A
R1209	A	D	5A
R1210	A	D	10A
R1211	A	D	4A
R1212	A	D	6B
R1213	A	D	9A
R1214	A	D	8A
R1215	A	D	6B
R1216	A	D	3A

REF.No.	LOCATION		
R1217	A	D	8A
R1218	A	D	8A
R1219	A	D	8A
R1225	A	D	3A
R1226	A	D	4A
R1227	A	D	2A
R1228	A	D	4A
TEST POINT			
TP1201	A	D	3A
TP1202	A	D	2B
OTHERS			
DI1201	A	D	7A
S1205	A	D	3C
S1206	A	D	3B
S1207	A	D	1A
S1208	A	D	2A
S1212	A	D	10A
S1213	A	D	4A
S1216	A	D	4A
WR1201	A	D	3B

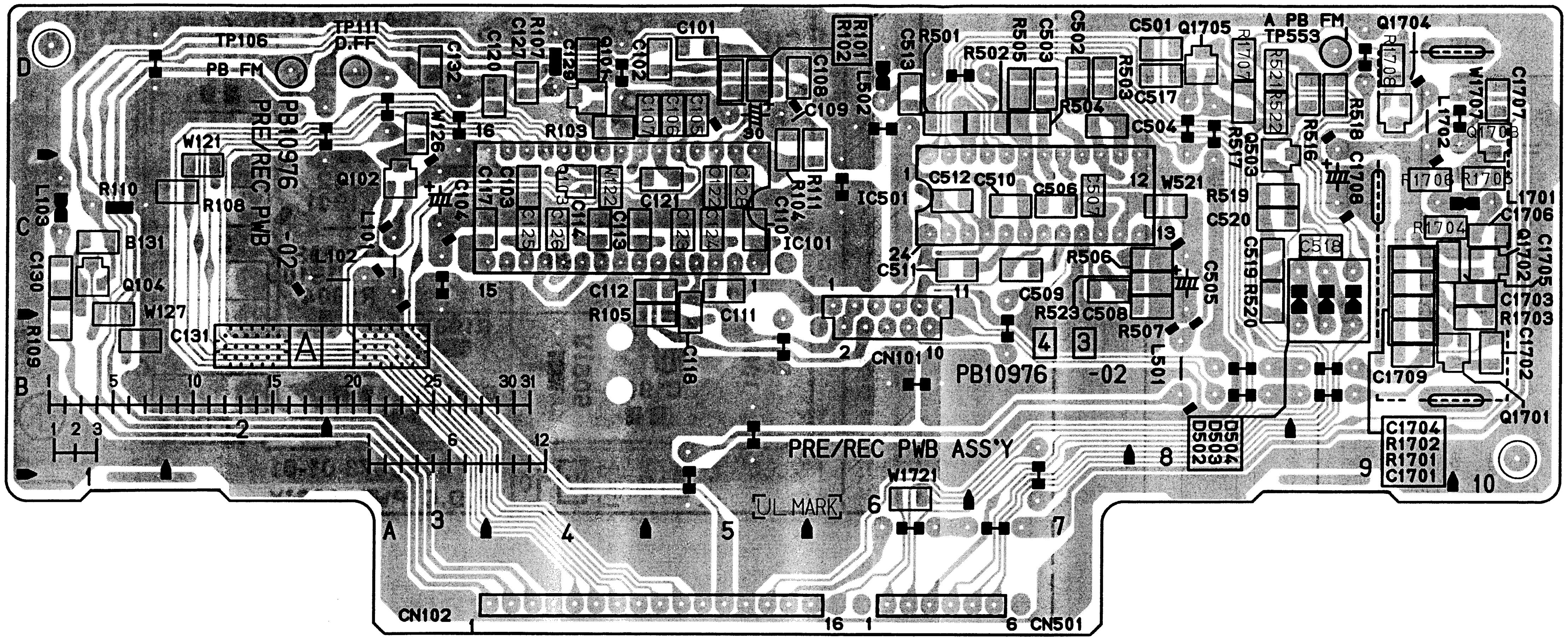

C
PB10973 -01-01
CN1201
1 13
2 12
S1205 PAUSE
D1230
S1206 REC
WR1201
B
2 8
TP1202 GND
UL MARK
1 2
FW1202
S1213/S1214 REVIEW/INSERT
D1211 OPERATE
D1231
L1201
SW/DISPLAY PWB ASS'Y
C1201
TP1201 TEST
R1216
B1201
D1213 R.A.E.
D1220
D1226
D1222
R1225
B1205
B1208
R1226
JUST REC
S1216
R1228
D1212
A
S1207 PLAY
C1211
S1208 STOP/EJECT
R1227
D1223
D1225
D1224
D1221
R1211
R1201
R1202
R1203
R1204
R1207
D1232
R1206
R1205
R1209
D1202
D1203
D1204
D1234
R1208
C1204
C1205
D1233
R1215
R1212
IC1201
R1210
C1202
WR1201
C1212
DI1201
R1217
R1218
R1219
R1214
C1207
R1213
B1207
D1210
S1212/S1215 A.DUB /SP/LP
FW1201
C1206
B1204
B1203
B1206
C1210
C1203
R1210
IC1202
D1201
CN1202
7
1
52
50
45
40
35
30
25
20
15
10
5
1
47 46
43
40
35
18
15
10
5
2
1
2
3
4
5
6
7
8
9
10

4.16 PRE/REC SCHEMATIC DIAGRAM


43 PRE/REC
NOT USED
FROM/TO U. DRUM
CN101
CH1
CH2
NC
FMA CH1
FMA CH2
FLY. E
FROM/TO FM AUDIO
FMA_CH1
FMA_COM
FMA_CH2
REC(H)
SW12V
GND
SW5V
FROM/TO VIDEO/AUDIO (Page4-10) CN1
CN102
REC COLOR
REC FM
PB FM
GND
COLOR ROT
C. SYNC
SSB CLK
SSB DATA
D. FF
BEST(L)
SW5V
VIDEO ENV.
GND
OPEN
REC(H)
SW12V
FLY ST(L)
WF1
WF2
WF3
WF4
WF5
WF6
WF7
TP106 PB FM
TP111 D. FF
IC101 HA118295NT
LOGIC
SP/EP
ENV DET
AGC CONT
R. MUTE
REC/PB
T. PLAY
REC IDLE
ENV DET
HPF
DET
COMP
VCA
REC ADJ
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SP
EP
C117 0.022
C125 SHORT
C126 OPEN
C114 0.022
C113 0.022
C112 0.022
C111 0.022
C110 0.022
C118 0.022
R105 470
C123 56P
C124 56P
C104 47 /6.3
C103 0.1
C109 OPEN
C108 OPEN
C120 330p
R104 1.2K
R111 OPEN
B101 SHORT
L101 100μ
R103 10k
C107 0.01
C106 2700p
C105 0.047
C122 OPEN
C128 OPEN
C102 0.01
C101 0.01
R102 3.3k
R101 11k
L102 OPEN
Q104
C130 47p
B131 OPEN
R109 1.5K
L103 180μ
R110 680
Q103 DTC144WU
C121 0.1
C129 0.1
Q101
C127 0.01
R107 1.8K
C132 OPEN
C131 OPEN
Q102 DTA144WU
R108 OPEN
Q101. Q104 2SC4081(QRS)
C1709 OPEN
C1701 0.022
R1701 270
R1702 560
R1703 330
Q1701
C1702 100p
C1703 100p
Q1702
C1704 100p
C1705 0.001
R1704 47k
R1705 68k
L1701 10μ
C1706 27p
Q1703
R1706 39k
C1707 0.1
C1708 OPEN
L1702 1μ
Q1704
R1708 47k
R1707 10k
Q1705 DTC143E
A
B
C
D
E
F
G
H
1
2
3
4
5

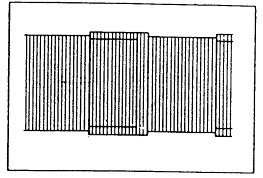
NOTE : For PRE/REC waveforms. please refer to page4-38.

4.17 PRE/REC CIRCUIT BOARD


TP106
PB-FM
TP111
D.FF
PB10976
PRE/REC PWB
-02
PB10976 -02
PRE/REC PWB ASS'Y
UL MARK
A PB FM
TP553
IC101
IC501
CN101
CN102
CN501
Q102
Q104
Q1701
Q1704
Q1705
C1709
C1704
R1702
R1701
C1701
D502
D503
D504
W121
W127
W1721
W521
A
B
C
D
1
2
3
4
5
6
7
8
9
10

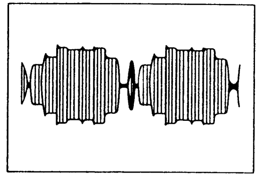
WAVEFORMS

WF1 CN102-2 REC FM



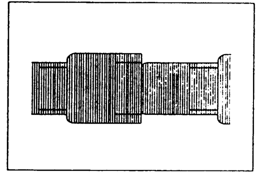
REC 3.0Vp-p
0.1V/5m sec/DIV

WF2 CN102-1 REC COLOR



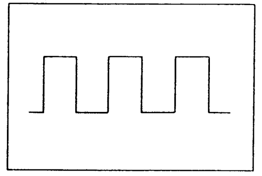
REC 3.6Vp-p
0.2V/20μsec /DIV

WF3 TP106 PB FM



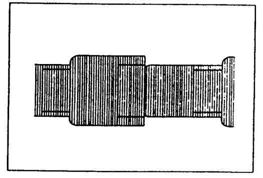
PB0.44Vp-p
20mV/5m sec/DIV

WF4 TP111 D.FF



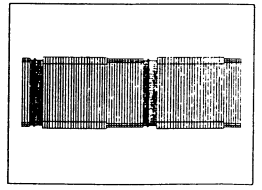
REC/PB 5.2Vp-p
0.2V/10m sec/DIV

WF5 IC 101-22



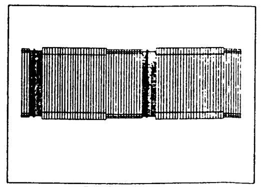
PB0.56Vp-p
20mV/5msec/DIV

WF6 IC101-28



REC0.28Vp-p
10mV/5m sec/DIV

WF7 IC101-4

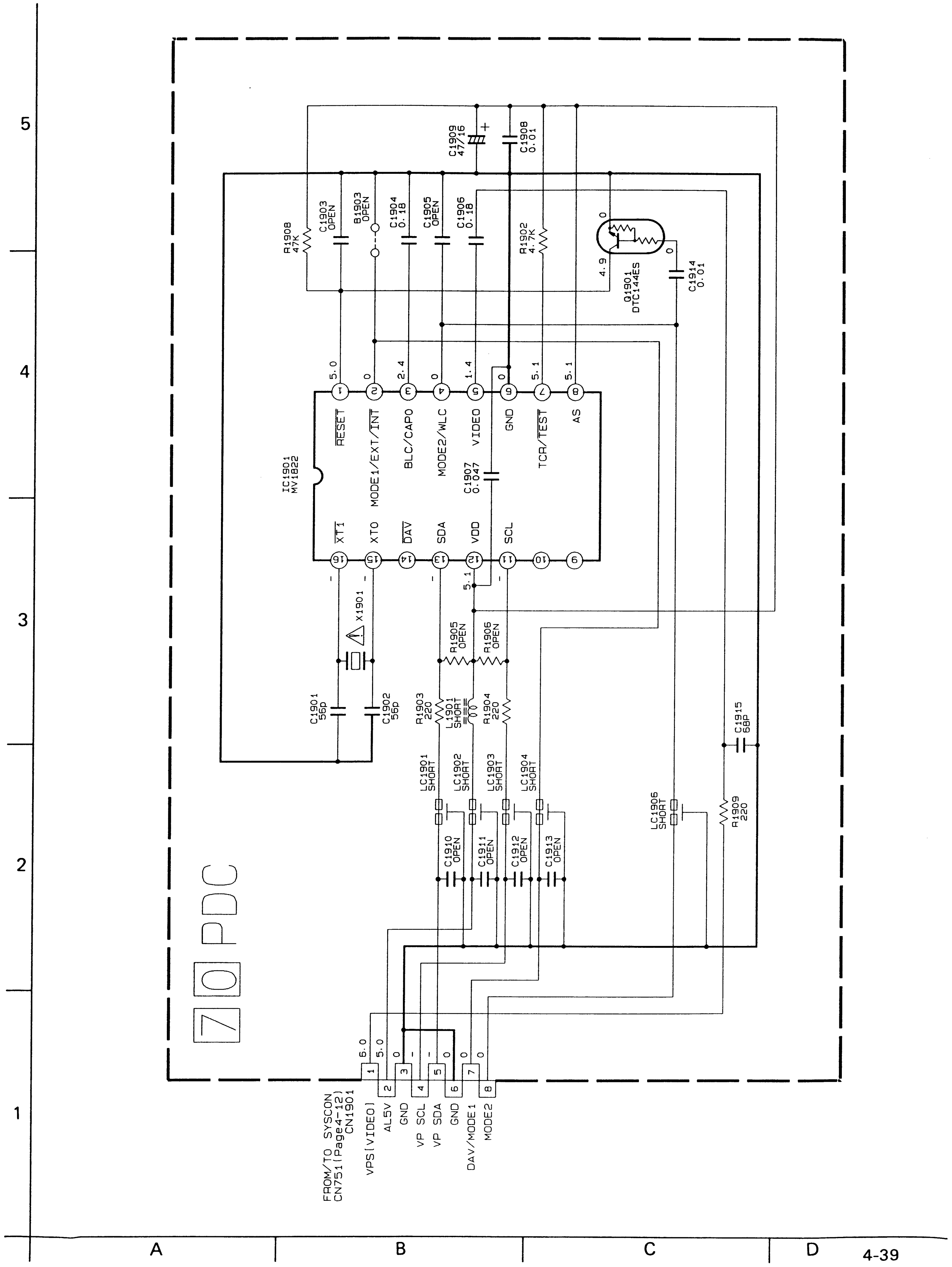


REC 2.0Vp-p
0.1V/5m sec/DIV

COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

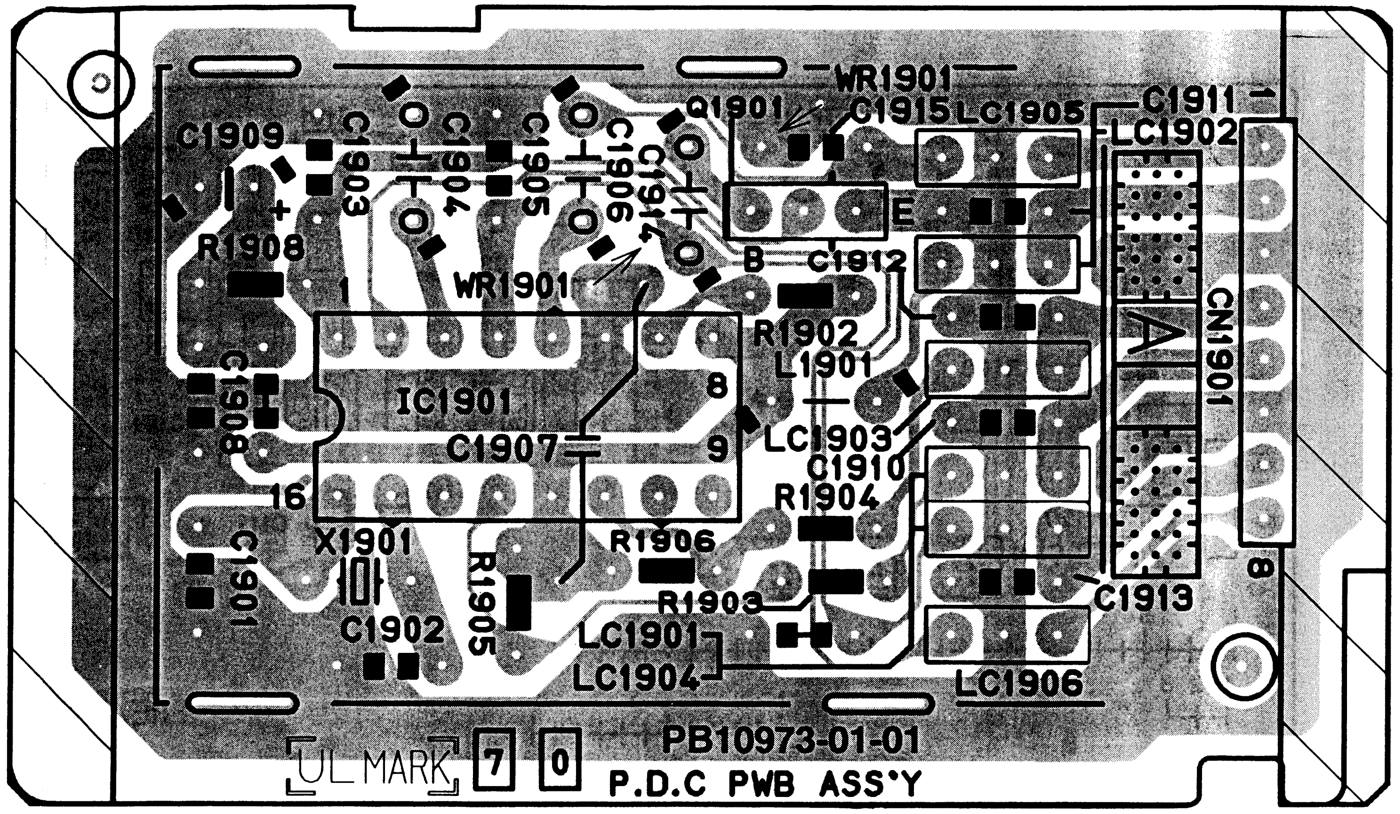
REF.No.	LOCATION		
CAPACITOR			
C101	B	C	5D
C102	B	C	5D
C103	B	C	4C
C104	A	D	3C
C105	B	C	5D
C106	B	C	5D
C107	B	C	5D
C108	B	C	5D
C109	A	D	5D
C110	B	C	5C
C111	B	C	5C
C112	B	C	5C
C113	B	C	4C
C114	B	C	4C
C117	B	C	3C
C118	B	C	5C
C120	B	C	4D
C121	B	C	5C
C122	B	C	5C
C123	B	C	5C
C124	B	C	5C
C125	B	C	4C
C126	B	C	4C
C127	B	C	4D
C128	B	C	5C
C129	B	C	4D
C130	B	C	1C
C131	B	C	1B
C132	B	C	3D
C501	B	C	8D
C502	B	C	7D
C503	B	C	7D
C504	B	C	7D
C505	A	D	8C
C506	B	C	7C
C507	B	C	7C
C508	B	C	7C
C509	B	C	7C
C510	B	C	7C
C511	B	C	6C
C512	B	C	6C
C513	B	C	6D
C517	B	C	8D
C518	B	C	9C
C519	B	C	8C
C520	B	C	8C
C1701	B	C	9B
C1702	B	C	10B
C1703	B	C	10C
C1704	B	C	9C
C1705	B	C	9C
C1706	B	C	10C
C1707	B	C	10D
C1708	A	D	9D
C1709	B	C	9B
CONNECTOR			
CN101	A	D	6C
CN102	A	D	4A
CN501	A	D	6A
DIODE			
D502	A	D	9B
D503	A	D	9B
D504	A	D	9B
IC			
IC101	A	D	5C
IC501	A	D	6D
COIL			
L101	A	D	3C
L102	A	D	3C
L103	A	D	1C
L501	A	D	8B
L502	A	D	6D
L1701	A	D	10C
L1702	A	D	9D
TRANSISTOR			
Q101	B	C	4D
Q102	B	C	3C
Q103	B	C	4C
Q104	B	C	1C
Q503	B	C	8D
Q1701	B	C	10B
Q1702	B	C	10C
Q1703	B	C	10D
Q1704	B	C	9D
Q1705	B	C	8D
RESISTOR			
R101	B	C	5D
R102	B	C	5D
R103	B	C	4D
R104	B	C	5D
R105	B	C	5C
R107	A	D	4D
R108	B	C	2C
R109	B	C	1B
R110	A	D	1C
R111	B	C	6D
R501	B	C	6D
R502	B	C	7D
R503	B	C	7D
R504	B	C	7D
R505	B	C	7D
R506	B	C	8C
R507	B	C	8C
R516	B	C	9D
R517	B	C	8D
R518	B	C	9D
R519	B	C	8C
R520	B	C	8C
R521	B	C	8D
R522	B	C	8D
R523	B	C	8C
R1701	B	C	9C
R1702	B	C	9C
R1703	B	C	10B
R1704	B	C	9C
R1705	B	C	10C
R1706	B	C	9C
R1707	B	C	8D
R1708	B	C	9D
TEST POINT			
TP106	A	D	2D
TP111	A	D	3D
TP553	A	D	9D

4.18 PDC SCHEMATIC DIAGRAM



5
4
3
2
1
A
B
C
D
C1909 47/16
C1908 0.01
R1908 47K
C1903 OPEN
B1903 OPEN
C1904 0.18
C1905 OPEN
C1906 0.18
R1902 4.7K
Q1901 DTC144ES
4.9
C1914 0.01
IC1901 MV1822
5.0
0
2.4
0
1.4
0
5.1
5.1
RESET
MODE1/EXT/INT
BLC/CAPO
MODE2/WLC
VIDEO
GND
TCR/TEST
AS
C1907 0.047
XTI
XTO
DAV
SDA
VDD
SCL
5.1
X1901
C1901 56P
C1902 56P
R1905 OPEN
R1906 OPEN
R1903 220
L1901 SHORT
R1904 220
C1915 68P
LC1901 SHORT
LC1902 SHORT
LC1903 SHORT
LC1904 SHORT
LC1906 SHORT
R1909 220
C1910 OPEN
C1911 OPEN
C1912 OPEN
C1913 OPEN
7 0 PDC
6.0
5.0
0
0
0
FROM/TO SYSCON CN751(Page4-12) CN1901
VPS(VIDEO)
AL5V
GND
VP SCL
VP SDA
GND
DAV/MODE1
MODE2

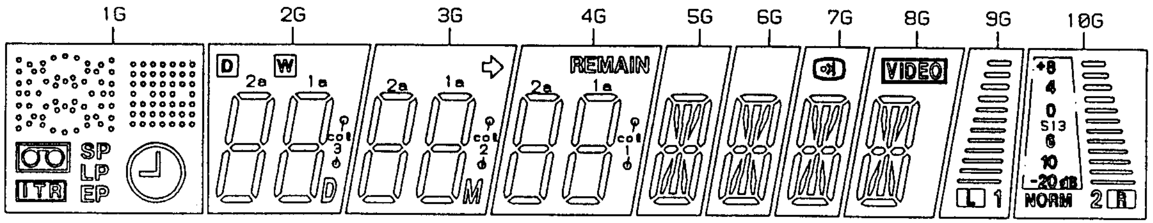
4.19 PDC CIRCUIT BOARD

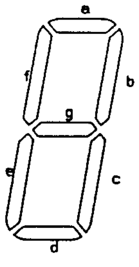


WR1901
Q1901
C1915
LC1905
C1911
LC1902
C1909
C1903
C1904
C1905
C1906
C1914
R1908
E
B
C1912
WR1901
R1902
L1901
1
8
9
16
IC1901
C1908
C1907
LC1903
C1910
R1904
CN1901
X1901
C1901
R1905
R1906
R1903
C1913
C1902
LC1901
LC1904
LC1906
UL MARK
7 0
PB10973-01-01
P.D.C PWB ASS'Y

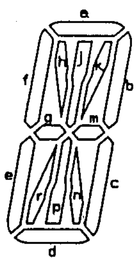
4.20 FDP GRID ASSIGNMENT, SEGMENT DESIGNATION AND ANODE CONNECTION

GRID ASSIGNMENT

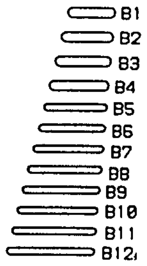

1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
D
W
2a
1a
col
3
D
2a
1a
col
2
M
REMAIN
2a
1a
col
1
VIDEO
SP
LP
ITR
EP
L
1
+8
4
0
S13
6
10
-20dB
NORM
2
R



(2G~4G)


a
b
f
h
j
k
g
m
e
c
r
p
n
d

(5G~8G)

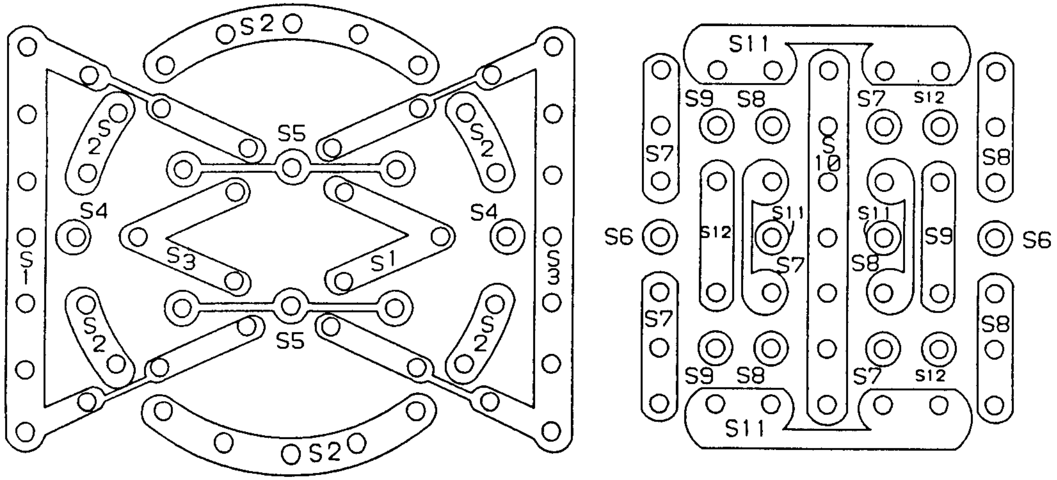

B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12

(9G, 10G)

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G
P1	S1	2a	2a	2a	a	a	a	a	B1	B1
P2	S2	2b	2b	2b	b	b	b	b	B2	B2
P3	S4	2f	2f	2f	f	f	f	f	B3	B3
P4	S5	2g	2g	2g	h	h	h	h	B4	B4
P5	S3	2c	2c	2c	j	j	j	j	B5	B5
P6	S6	2e	2e	2e	k	k	k	k	B6	B6
P7	S7	2d	2d	2d	g	g	g	g	B7	B7
P8	S8	D	M	-	m	m	m	m	B8	B8
P9	S12	1a	1a	1a	c	c	c	c	B9	B9
P10	S9	1b	1b	1b	e	e	e	e	B10	B10
P11	S11	1f	1f	1f	n	n	n	n	B11	B11
P12	S10	1g	1g	1g	p	p	p	p	B12	B12
P13	OO	1c	1c	1c	r	r	r	r	L	R
P14	SP	1e	1e	1e	d	d	d	d	1	2
P15	LP	1d	1d	1d	-	-	-	-	-	S13
P16	🕘	col3	col2	col1	-	-	-	-	-	NORM
P17	EP	D	⇨	REMAIN	-	-	⊙	VIDEO	-	-
P18	ITR	W	-	-	-	-	-	-	-	-

SEGMENT DESIGNATION

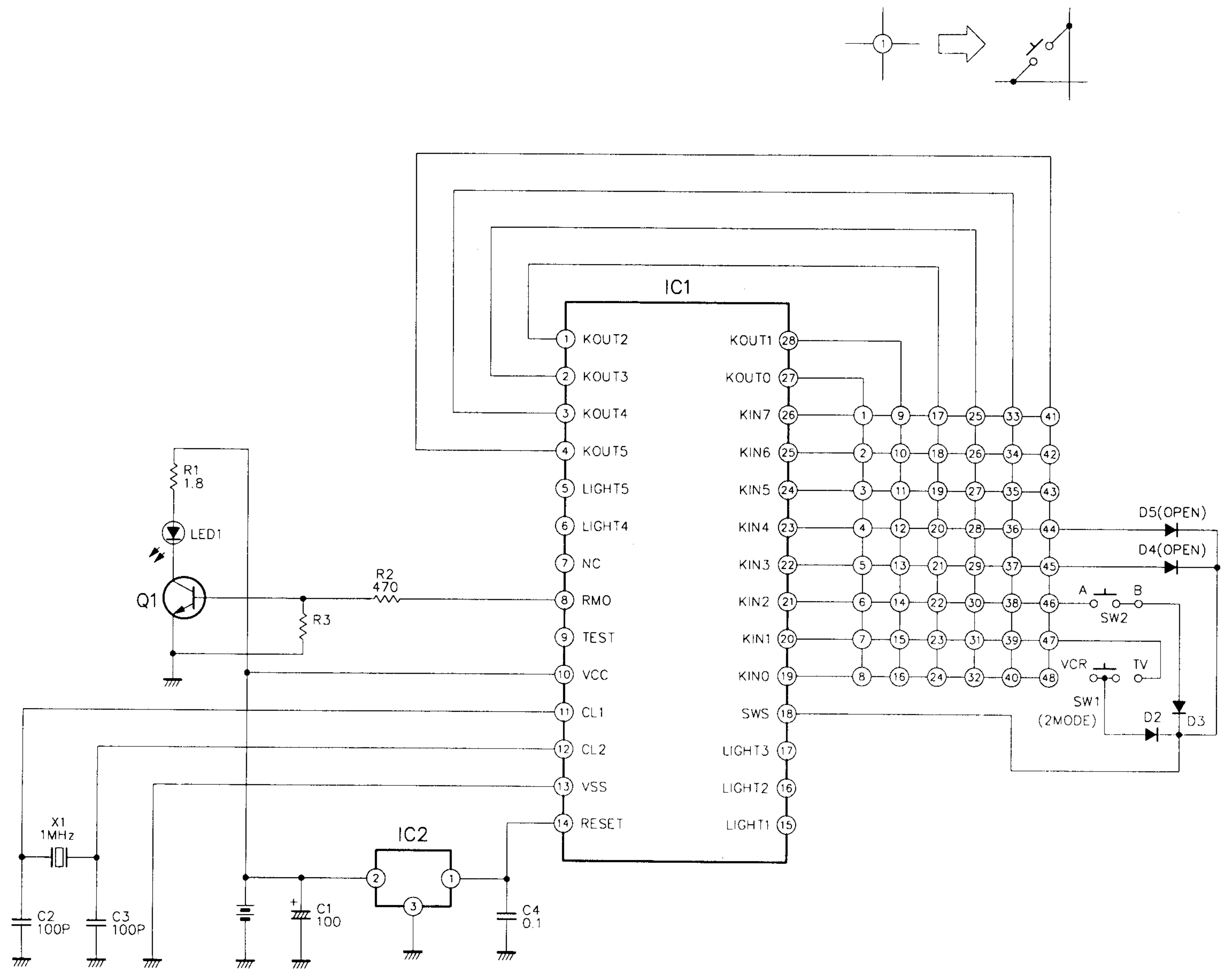

S20
S2
S5
S2
S4
S4
S1
S3
S3
S1
S2
S5
S2
S20
S11
S9
S8
S7
S12
S7
S10
S8
S6
S12
S11
S11
S9
S6
S7
S8
S7
S8
S9
S8
S7
S12
S11

(10G)

4.21 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

REMOTE CONTROLLER



IC1
KOUT2
KOUT3
KOUT4
KOUT5
LIGHT5
LIGHT4
NC
RMO
TEST
VCC
CL1
CL2
VSS
RESET
KOUT1
KOUT0
KIN7
KIN6
KIN5
KIN4
KIN3
KIN2
KIN1
KIN0
SWS
LIGHT3
LIGHT2
LIGHT1
IC2
R1 1.8
LED1
Q1
R2 470
R3
X1 1MHz
C2 100P
C3 100P
C1 100
C4 0.1
D5(OPEN)
D4(OPEN)
A
B
SW2
VCR
TV
SW1 (2MODE)
D2
D3

Key No.	Key Name
1	PUSH JOG >>
2	–
3	R.A.EDIT
4	SCENE FINDER
5	PRG CHK
6	7
7	8
8	9
9	ILLUMI GUIDE
10	TV PROG +
11	CH +/TV VOL +
12	PROG
13	OK
14	CANCEL
15	0
16	TIMER
17	OPERATE
18	–
19	AUDIO MONITOR
20	–/– –
21	TV/VIDEO
22	RE–VIEW
23	CH SEARCH
24	CH STORE
25	STOP –
26	DATE +
27	DATE –
28	START –
29	TV PROG –
30	CLOCK
31	DISPLAY
32	MODE
33	START +
34	PUSH JOG <<
35	PLAY
36	REW
37	FF
38	1
39	2
40	3
41	CH –/TV VOL –
42	STOP +
43	STOP
44	REC
45	PAUSE
46	4
47	5
48	6
44+35	REC PLAY
44+45	REC PAUSE

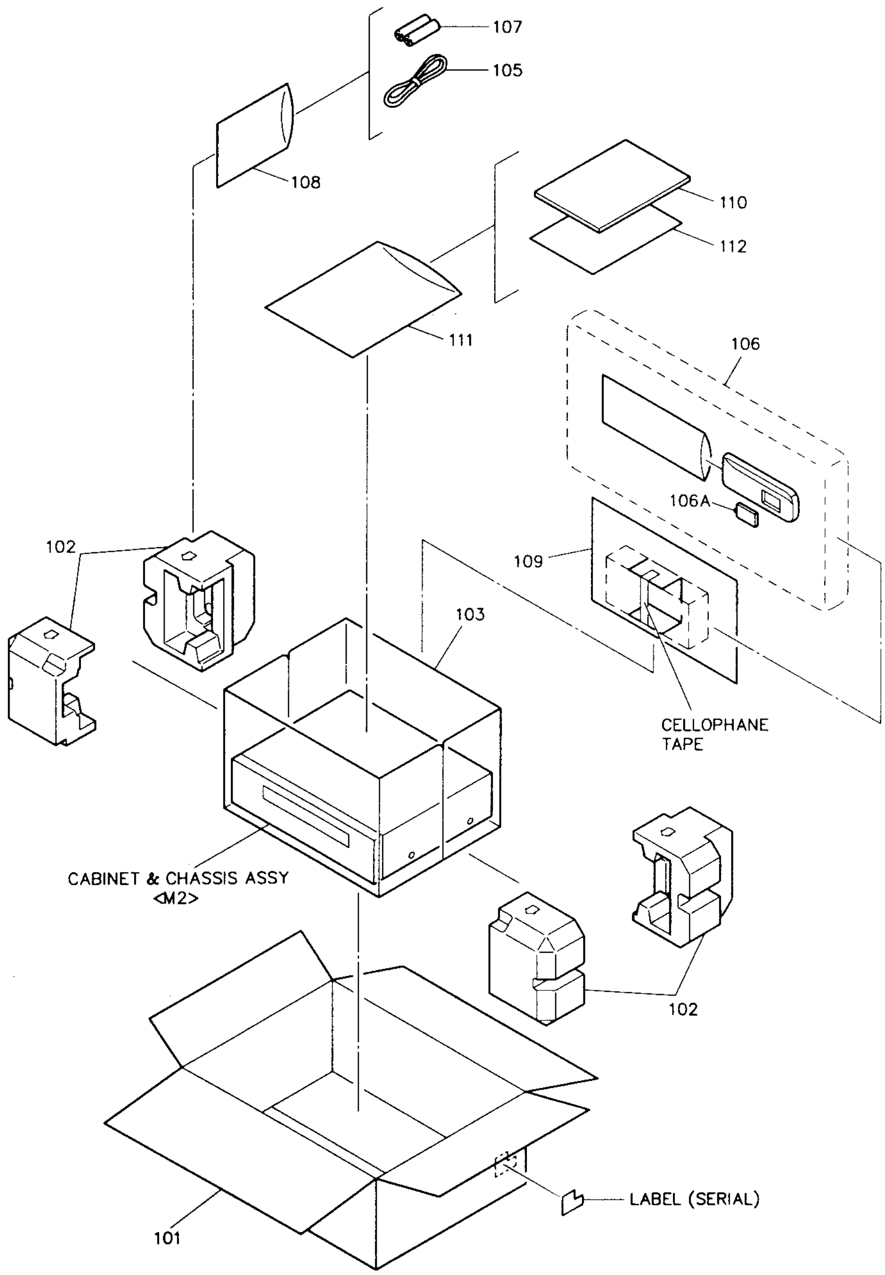
PEAC0442

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

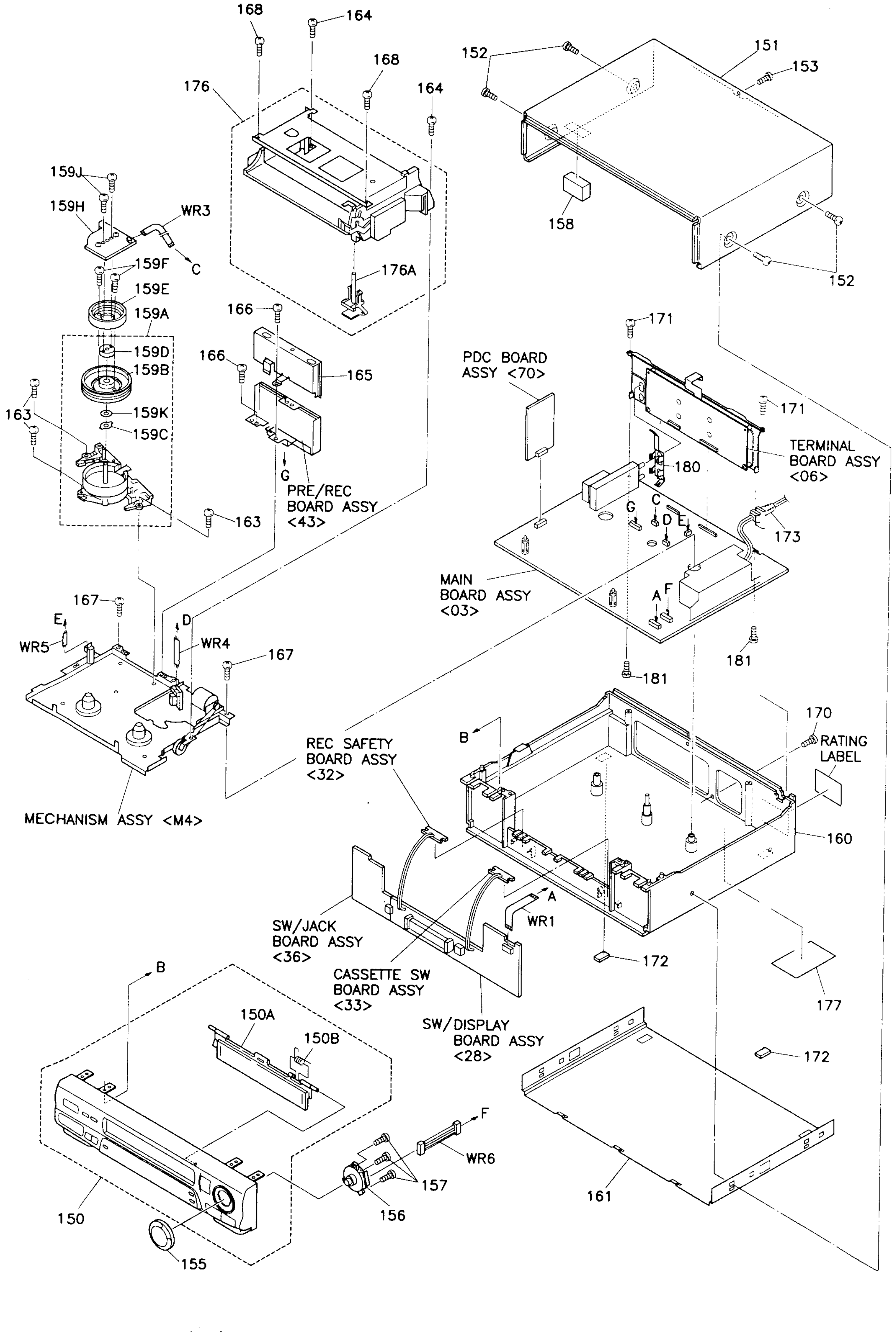

107
105
108
110
112
111
106
106A
109
102
103
CELLOPHANE TAPE
CABINET & CHASSIS ASSY <M2>
102
LABEL (SERIAL)
101

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
********************************			
			PACKING AND ACCESSORY ASSEMBLY <M1>
	101	PQ35532-11	PACKING CASE
	102	PQ35533A-1	CUSHION ASSEMBLY
	103	PQM30021-93	POLY(FOAM)BAG
⚠	105	PEAC0300-02	RF CABLE
⚠	106	PQ21953A-3	REMOTE CONTROLLER
	106A	PQ46614	COVER(BATTERY)
	107	R6PRPA-2ST	BATTERY,X2
	108	PQ35364	POLY BAG
	109	PQ35551	SHEET,REMOTE CONTROLLER
⚠	110	PU30425-1808	INSTRUCTIONS
	111	PQ35364-4	POLY BAG
	112	PQ45146-96	SHEET(SPAIN)

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

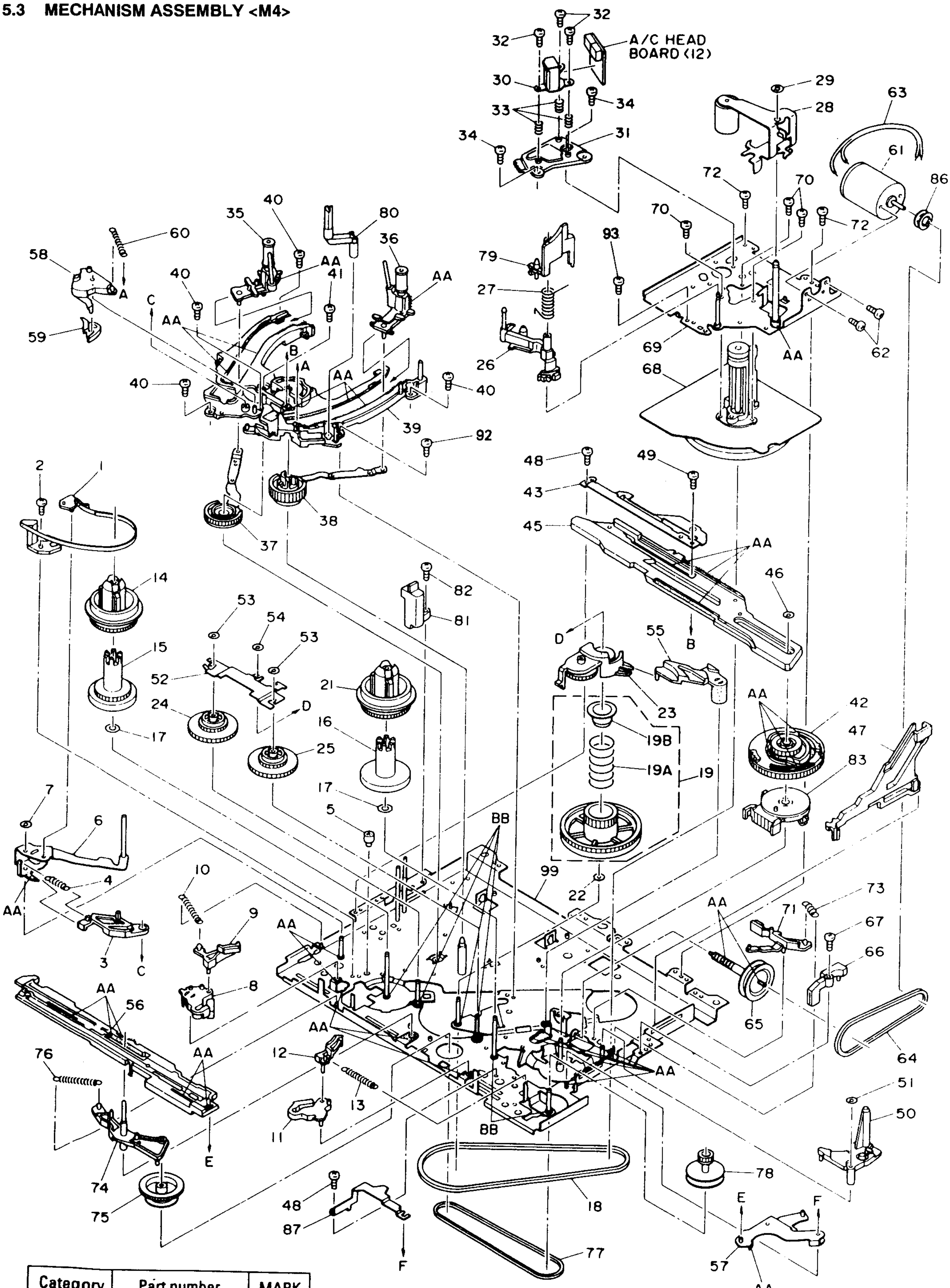

168
164
168
176
164
152
151
153
159J
159H
WR3
C
159F
159E
159A
159D
159B
159K
159C
163
163
176A
166
166
165
G
PRE/REC BOARD ASSY <43>
158
152
171
PDC BOARD ASSY <70>
171
TERMINAL BOARD ASSY <06>
180
G
C
D
E
173
MAIN BOARD ASSY <03>
A
F
167
E
WR5
D
WR4
167
181
181
170
RATING LABEL
B
REC SAFETY BOARD ASSY <32>
MECHANISM ASSY <M4>
160
A
WR1
SW/JACK BOARD ASSY <36>
172
CASSETTE SW BOARD ASSY <33>
177
B
150A
150B
SW/DISPLAY BOARD ASSY <28>
172
F
WR6
157
150
156
161
155

****

CABINET AND CHASSIS ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	150	PQ11906G	FRONT PANEL ASSEMBLY
	150A	PQ21915-5	CASSETTE DOOR
	150B	PQ46448	TORSION SPRING
⚠	151	PQ11676-7	TOP COVER
	152	SDSF3010M	SCREW,X4 SIDE
	153	SDSF3010M	SCREW,REAR
	155	PQ35473	KNOB (SHUTTLE)
	156	PEME0913	SHUTTLE ASSEMBLY
	157	SDSF2608Z	SCREW,X3
	158	PQM30029-244	SPACER
	159A	PDM2282D	DRUM SUB ASSEMBLY
	159B	PDM3403D	UPPER DRUM ASSEMBLY
	159C	PDM4400C-3	BRUSH ASSEMBLY
	159D	PDM4345A	COLLAR ASSEMBLY
	159E	PDZ0141-2	ROTOR ASSEMBLY
	159F	SPSH2660Z	SCREW,X2
	159J	SPSP2606Z	SCREW,X2
⚠	159H	PDZ0141-1-2	STATOR ASSEMBLY
	159K	PDM4050-10	WASHER
⚠	160	PQ11666-3-14	BOTTOM CHASSIS
⚠	161	PQ11668-2	BOTTOM COVER
	163	SPST2608Z	SCREW,X3 DRUM
	164	SPST2610Z	SCREW,X2 CASS HOUS ASSY
	165	PQ21740-1-1	SHIELD CASE,PRE
	166	SDST2606Z	SCREW,X2 PRE
	167	SDSF4012Z	SCREW,X2 MECH
	168	SDSF3010Z	SCREW,X2 CASS HOUS ASSY
	170	SDSF3010M	SCREW,TERMINAL
	171	SDSF3010Z	SCREW,X2 TERMINAL
	172	PQ43013-3	FOOT,X2
⚠	173	QMP4A10-170	POWER CORD
	176	PUS29724B-1	CASSETTE HOUSING ASSY
	176A	PQ46359	CASSETTE SWITCH PIN
⚠	177	PQ46485	SPACER(SAFETY)
	180	PQ21623-1-2	EARTH PLATE(RF)
	181	SDSF3008Z	SCREW,X2 EARTH PLATE
	WR1	PW30802-1314	WIRE, SW/DISP CN1201
	WR3	PW30803-0414	WIRE,DRUM
	WR4	PW30101-C0HH887	WIRE,A/C HEAD
	WR5	PW30101-P0HH882	WIRE,FE HEAD
	WR6	PW30218-0441613	WIRE,JOG

5.3 MECHANISM ASSEMBLY <M4>


32
32
A/C HEAD
BOARD (12)
30
33
34
34
31
29
28
63
61
86
72
70
70
72
40
35
80
36
60
58
A
C
AA
40
41
AA
AA
79
27
93
26
69
AA
62
68
59
B
A
AA
40
40
39
92
48
49
2
1
43
38
37
45
AA
14
82
81
46
53
54
53
15
52
21
D
55
B
24
D
23
42
17
16
25
19B
19A
19
47
83
7
17
6
5
BB
99
4
10
22
73
AA
AA
71
67
3
C
9
AA
66
8
56
AA
65
AA
AA
76
12
AA
64
13
11
BB
51
50
74
E
78
48
18
E
F
75
87
77
F
57
AA

Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

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MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PQ46298A-5	TENSION BAND ASSEMBLY
2	SDST2608Z	SCREW
3	PQ35012-1-3	TENSION ARM LEVER
4	PQM30001-385109	TENSION SPRING
5	PQ46302-1-3	ADJUST PIN
6	PQ46303B-7	TENSION ARM ASSEMBLY
7	PQM30017-47	SLIT WASHER
8	PQ46548A	MAIN BRAKE ASSEMBLY (SUPPLY)
9	PQ46306A-3	SUB BRAKE ASSEMBLY (SUPPLY)
10	PQM30001-393	TENSION SPRING
11	PQ46550A	MAIN BRAKE ASSEMBLY (TAKE UP)
12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
13	PQM30001-389102	TENSION SPRING
14	PQ46499A-3	REEL ASSEMBLY (SUPPLY)
15	PQ35014-1-1	SLIT DISK (SUPPLY)
16	PQ35015-1-1	SLIT DISK (TAKE UP)
17	PQM30018-69	SPACER,X2
18	PQM30003-38	BELT(CAPSTAN)
19	PQ46497B-2	PULLEY ASSEMBLY
19A	PQM30002-233	COMPRESION SPRING
19B	PQ46311	SPRING CAP
21	PQ46498A-2	REEL ASSEMBLY (TAKE UP)
22	PQM30018-69	SPACER
23	PQ46312B-8	IDLER ARM ASSEMBLY
24	PQ46316A-1	CLUTCH UNIT (SUPPLY)
25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
26	PQ46325B-8	GUIDE ARM ASSEMBLY
27	PQ46326-2	TORSION SPRING
28	PQ46327A	PINCH ROLLER ARM ASSEMBLY
29	PQM30017-24	SLIT WASHER,P LEVER
30	PEHE0182	AUDIO CONTROL HEAD
31	PQ35206-1-3	HEAD BASE
32	PQ43687A	SPECIAL SCREW,X3
33	PQM30002-192	COMPRESSION SPRING,X3
34	SDSP2604Z	SCREW,X2
35	PQ46595A	POLE BASE ASSEMBLY (SUPPLY)
36	PQ46597A	POLE BASE ASSEMBLY (TAKE UP)
37	PQ46332A-3	LOADING ARM ASSEMBLY (SUPPLY)
38	PQ46337A-6	LOADING ARM ASSEMBLY (TAKE UP
39	PQ11657-1-9	GUIDE RAIL
40	SPST2608Z	SCREW,X4
41	SDST2612Z	SCREW
42	PQ21684-1-3	CONTROL CAM
43	PQ35138-1-2	CONTROL BRACKET
45	PQ11658-1-12	CONTROL PLATE
46	PQM30017-8	SLIT WASHER
47	PQ21685-2-9	PINCH PLATE
48	SPST2606Z	SCREW,X2
49	SPSF2608M	SCREW
50	PQ46342B-10	LEVER ASSEMBLY
51	PQM30017-8	SLIT WASHER
52	PQ35083-1-8	REEL BRACKET
53	PQM30017-51	SLIT WASHER,X2
54	Q03093-830	WASHER
55	PQ35026-1-7	IDLER LEVER
56	PQ11659-1-11	SLIDE PLATE
57	PQ46344A-2	CHANGE LEVER ASSEMBLY
58	PQ21686-1-3	TAKE UP LEVER ASSEMBLY
59	PQ46345-1-2	TAKE UP HEAD
60	PQM30001-387106	TENSION SPRING
⚠ 61	PU60628-3-2	LOADING MOTOR
62	SPSP3003Z	SCREW,X2
63	PW30101-80AJ632	WIRE
64	PQM30003-39	BELT
65	PQ46395B	WORM GEAR ASSEMBLY
66	PQ21699	WORM BEARING
67	SPST2606Z	SCREW
⚠ 68	PU61487-2	CAPSTAN MOTOR
69	PQ46347F-15	SUB DECK ASSEMBLY
70	SPSG2608Z	SCREW,X3
71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
72	SPST2606Z	SCREW,X2
73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
74	PQ46353A-2	CHANGE ARM ASSEMBLY
75	PQ46354	CHANGE GEAR
76	PQM30001-386	TENSION SPRING
77	PQM30003-40	BELT
78	PQ46355	CASSETTE GEAR
79	PQ35030-1-5	LID GUIDE
80	PQ21689-2	LED PRISM
81	PEHE0237	FULL ERASE HEAD
82	SDST2610Z	SCREW
83	PU61432-1-1	ROTARY ENCODER
86	PQ43546-1-2	MOTOR PULLEY
87	PQ35217-1-2	CONTROL BRACKET 2
92	SDST2608Z	SCREW
93	SDST2608Z	SCREW
99	PQ21680D-18	MAIN DECK ASSEMBLY

5.4 ELECTRICAL PARTS LIST

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MAIN BOARD ASSEMBLY <03>

#△ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	PB10980D-01	MAIN BOARD ASSEMBLY
IC1	HA118203AF	IC
IC2	MSM7470-71MS-XE	IC
IC701	HD6433929TA35F	QFP IC (MCU)
IC702	24LC08B/P	IC
	or X24C08-10P	IC
	or AT24C08-10PC	IC
IC703	S-80728AN-Z	IC
	or RE5VA28A	IC
	or RE5VL28A	IC
IC704	TA7291S	IC
IC705	M50253P	IC
	or BU2090	IC
IC706	M50253P	IC
	or BU2090	IC
IC1001	BA15218N	IC
	or M5223L	IC
	or XRA15218N	IC
IC1101	BU2885BS	IC
	or BU2884BS	IC
IC1301	LC74783-9153	IC (OSD)
Q1	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q9	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q15	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q16	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q19	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q20	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q21	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q258	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q301	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
Q302	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q303	DTC114TU	TRANSISTOR
	or UN5215	TRANSISTOR
Q304	DTA114EU	TRANSISTOR
	or UN5111	TRANSISTOR
Q305	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q306	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q307	2SA1576(QR)	TRANSISTOR
Q308	2SA1576(QR)	TRANSISTOR
Q310	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q314	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q701	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q702	DTC114WU	TRANSISTOR
Q704	PN268VI	PHOTO TRANSISTOR
Q705	PN268VI	PHOTO TRANSISTOR
Q708	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
Q711	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q901	2SK2632-CB14	FE TRANSISTOR
	or 2SK2129-LT	FE TRANSISTOR
Q902	2SC3616(ML)	TRANSISTOR
Q951	2SD1913(RS)	TRANSISTOR
	or 2SD2061(F)	TRANSISTOR
Q952	2SC4081(RS)	TRANSISTOR
Q953	2SC3616(MLK)	TRANSISTOR
Q954	DTA114EU	TRANSISTOR
Q955	2SD2144S(UVW)	TRANSISTOR
Q956	2SB1256	TRANSISTOR
Q957	DTC114TU	TRANSISTOR
Q958	2SC1740S(RS)	TRANSISTOR
	or 2SC3199(GB)-TJK	TRANSISTOR
Q960	2SB1256	TRANSISTOR
Q1002	2SB810H,J	TRANSISTOR
Q1003	2SC3068	TRANSISTOR
Q1004	2SA1576(RS)	TRANSISTOR
Q1005	2SC4081(RS)	TRANSISTOR
Q1008	2SA1576(RS)	TRANSISTOR
Q1011	2SC4081(RS)	TRANSISTOR
Q1012	2SA1576(RS)	TRANSISTOR
Q1013	2SA1576(RS)	TRANSISTOR
Q1014	DTC144WU	TRANSISTOR
Q1015	DTC144WU	TRANSISTOR
Q1101	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
Q1301	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q1302	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q1951	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q1952	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
D5	1SS133	DIODE
	or 1N4148M	DIODE
	or MA165	DIODE
D10	1SS133	DIODE
	or MA165	DIODE
	or 1N4148M	DIODE
D11	1SS133	DIODE
	or 1N4148M	DIODE
	or MA165	DIODE
D254	1SS133	DIODE
	or MA165	DIODE
	or 1N4148M	DIODE
D301	1N4148M	DIODE
	or 1SS133	DIODE
D701	RD9.1ES-T1B2	ZENER DIODE
	or MTZJ9.1(B)	ZENER DIODE
D702	11ES2	DIODE
D703	1N4148M	DIODE
	or MA165	DIODE
	or 1SS133	DIODE
D704	11ES2	DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
D705	1N4148M	DIODE
	or MA165	DIODE
	or 1SS133	DIODE
D706	1N4148M	DIODE
	or 1SS133	DIODE
	or MA165	DIODE
D709	1N4148M	DIODE
	or MA165	DIODE
	or 1SS133	DIODE
D710	SIR-381SB3FM	LE DIODE
	or SIR-381SB3FX1M	LE DIODE
D714	1N4148M	DIODE
	or MA165	DIODE
	or 1SS133	DIODE
D715	1N4148M	DIODE
	or 1SS133	DIODE
	or MA165	DIODE
D901	S1WB(A)60F4102	BRIDGE DIODE
	or S1WB(A)60F4062X	BRIDGE DIODE
	or S1WB(A)60F4072X	BRIDGE DIODE
D908	1SS133	DIODE
	or 1N4148M	DIODE
	or MA165	DIODE
D909	UZ27BSB	ZENER DIODE
	or MTZJ27(B)	ZENER DIODE
	or RD27ES-T1B2	ZENER DIODE
D910	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
D911	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
D951	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
D952	RL2Z-LFB2	FR DIODE
	or ERC30-02-L6	FR DIODE
D953	RL2Z-LFB2	FR DIODE
	or ERC30-02-L6	FR DIODE
D954	21DQ04	BARRIER DIODE
	or RK14LF-B2	BARRIER DIODE
D955	RD15ES-T1B1	ZENER DIODE
	or UZ15BSA	DIODE
	or MTZJ15(A)	ZENER DIODE
D956	RD6.2ES-T1B3	ZENER DIODE
	or MTZJ6.2C	ZENER DIODE
	or UZ6.2BSC	ZENER DIODE
D958	RD30ES-T1B1	ZENER DIODE
	or UZ30BSA	ZENER DIODE
	or MTZJ30(A)	ZENER DIODE
D959	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
D960	1SS133	DIODE
	or MA165	DIODE
	or 1N4148M	DIODE
D962	RD5.1JSB2	DIODE
	or MA4051N(M)	ZENER DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D963	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D964	11ES2	DIODE	
	or ERA15-02	DIODE	
D965	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D968	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D969	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D1001	MTZ10D	ZENER DIODE	
D1002	MTZJ33(C)	ZENER DIODE	
	or UZ33BSC	DIODE	
D1004	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D1005	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
R1	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R2	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R3	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R4	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R5	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R6	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R7	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R8	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R9	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R10	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R11	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R12	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R13	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R14	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R15	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R16	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R31	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R32	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R34	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R35	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R36	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R43	QRD161J-225	RESISTOR	2.2MΩ,1/6W
R45	QRSA08J-395YN	RESISTOR	3.9MΩ,1/10W
R46	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R47	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R49	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R50	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R51	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R52	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R53	QRD161J-273	RESISTOR	27kΩ,1/6W
R57	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R58	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R59	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R61	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R62	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R63	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R64	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R65	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R66	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R67	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R231	QRD161J-560	RESISTOR	56Ω,1/6W
R232	QRD161J-391	RESISTOR	390Ω,1/6W
R280	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R281	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R284	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R301	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R302	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R303	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R307	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R308	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R309	QRSA08J-121YN	RESISTOR	120Ω,1/10W
R310	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R313	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R314	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R316	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R317	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R318	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R319	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R320	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R321	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R322	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R323	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R324	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R325	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
R326	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R327	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R335	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R339	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R340	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R341	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R342	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R344	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R701	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R702	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R703	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R704	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R705	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R706	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R707	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R708	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R709	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R710	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R712	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R713	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R714	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R715	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R716	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R717	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R718	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R719	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R720	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R721	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R722	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R723	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R724	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R725	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R726	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R727	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R728	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R729	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R730	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R731	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R732	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R733	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R734	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R735	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R736	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R738	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R739	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R740	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R741	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R742	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R743	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R744	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R745	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R746	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R747	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R748	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R749	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R750	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R751	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R752	QRD161J-102	RESISTOR	1kΩ,1/6W
R753	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R754	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R755	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R756	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R757	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R762	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R763	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R765	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R766	QRSA08J-474YN	RESISTOR	470kΩ,1/10W
R767	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
R769	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R770	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R771	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R772	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R773	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R774	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R775	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R776	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R777	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R778	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R779	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R780	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R781	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R782	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R785	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R786	QRD161J-750	RESISTOR	75Ω,1/6W
R787	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R788	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R789	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R790	QRD161J-103	RESISTOR	10kΩ,1/6W
R791	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R792	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R793	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R795	QRD161J-104	RESISTOR	100kΩ,1/6W
R800	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R801	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R802	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R803	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R804	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R805	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R806	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R807	QRD161J-0R0	RESISTOR	0Ω,1/6W
	R808	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R809	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R810	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R811	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R815	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R816	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R817	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R818	QRD161J-562	RESISTOR	5.6kΩ,1/6W
	R821	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R901	QRD161J-224	RESISTOR	220kΩ,1/6W
	R902	QRD161J-224	RESISTOR	220kΩ,1/6W
	R903	QRD161J-683	RESISTOR	68kΩ,1/6W
	R904	QRD121J-331S	RESISTOR	330Ω,1/2W
	R905	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R906	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R907	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R909	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R910	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R911	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
	R912	QRG02DJ-683X	OMF RESISTOR	68kΩ,2W
	R951	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R952	QRV144F-2211AY	CMF RESISTOR	2.21kΩ,1/4W
	R953	QRV144F-3481AY	CMF RESISTOR	3.48kΩ,1/4W
	R954	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R955	QRG02DJ-222X	OMF RESISTOR	2.2kΩ,2W
⚠	R957	QRZ0077-101X	FUSIBLE RESISTOR	100Ω,1/4W
	R958	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R959	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R960	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R961	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R962	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R963	QRD161J-511	RESISTOR	510Ω,1/6W
	R964	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R965	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R966	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R967	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R968	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R970	QRX014J-9R1Z	MF RESISTOR	9.1Ω,1W
	R973	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R974	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R978	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R979	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1001	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R1002	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R1003	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R1004	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R1005	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1006	QRD161J-561	RESISTOR	560Ω,1/6W
	R1007	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R1008	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R1009	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1010	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1012	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R1016	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1021	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R1022	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R1023	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1024	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R1030	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1036	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1041	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1042	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1043	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R1044	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R1045	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R1046	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R1101	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R1102	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R1103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1104	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1106	QRD161J-102	RESISTOR	1kΩ,1/6W
	R1107	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R1108	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1109	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R1110	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1111	QRSA08J-821YN	RESISTOR	820Ω,1/10W
	R1112	QRD161J-222	RESISTOR	2.2kΩ,1/6W
	R1113	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1114	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1301	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R1302	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R1303	QRSA08J-151YN	RESISTOR	150Ω,1/10W
	R1304	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R1306	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R1307	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1308	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1309	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1401	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R1402	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1951	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R1952	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R1953	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1954	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R1955	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1956	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	C3	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C5	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C6	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C7	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C9	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C10	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C11	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C12	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C13	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C14	QCTA1CH-221	CAPACITOR	220pF,16V
	C15	QCTA1CH-680	CAPACITOR	68pF,16V
	C16	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C17	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
	C18	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C19	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C20	QCYA1EK-333	CAPACITOR	0.033μF,25V
	C21	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C22	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C23	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C24	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C25	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C26	QENF1CM-106	NP E CAPACITOR	10μF,16V
	C28	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C29	QEKJ1CM-106	E CAPACITOR	10μF,16V

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	C30	QEKJ1HM-104	E CAPACITOR	0.1μF,50V
	C31	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C32	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C34	QCYA1EK-473	CAPACITOR	0.047μF,25V
	C35	QCYA1CK-224	CAPACITOR	0.22μF,16V
	C36	QCTA1CH-390	CAPACITOR	39pF,16V
	C37	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C38	QCTA1CH-151	CAPACITOR	150pF,16V
	C39	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C41	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C42	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C43	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C44	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C45	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C46	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C47	QCTA1CH-100	CAPACITOR	10pF,16V
	C48	QCYA1HK-183	CAPACITOR	0.018μF,50V
	C53	QCTA1CH-181	CAPACITOR	180pF,16V
	C54	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C55	QENC1CM-106	NP E CAPACITOR	10μF,16V
	C56	QCTA1CH-6R0	CAPACITOR	6pF,16V
	C60	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C61	QCTA1CH-5R0	CAPACITOR	5pF,16V
	C63	QCYA1HK-221	CAPACITOR	220pF,50V
	C64	QCTA1CH-101	CAPACITOR	100pF,16V
	C66	QCTA1CH-101	CAPACITOR	100pF,16V
	C75	QCTA1CH-330	CAPACITOR	33pF,16V
	C76	QCTA1CH-330	CAPACITOR	33pF,16V
	C271	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C301	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C302	QCYA1HK-182	CAPACITOR	0.0018μF,50V
	C303	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C304	QCYA1EK-333	CAPACITOR	0.033μF,25V
	C306	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C307	QCYA1HK-153	CAPACITOR	0.015μF,50V
	C308	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C309	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C310	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C314	QFLC1HJ-153Z	F CAPACITOR	0.015μF,50V
	C315	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C317	QETC1HM-106	E CAPACITOR	10μF,50V
	C318	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C319	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C320	QFLC1HJ-823Z	F CAPACITOR	0.082μF,50V
	C321	QCYA1HK-331	CAPACITOR	330pF,50V
	C327	QEKJ1CM-107	E CAPACITOR	100μF,16V
	C329	QCYA1EK-473	CAPACITOR	0.047μF,25V
	C701	QAT3120-450Z	TRIM CAPACITOR,TIMER CLOCK	
	C702	QCTA1CH-180	CAPACITOR	18pF,16V
	C703	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C704	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C709	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C710	QCTA1CH-101	CAPACITOR	100pF,16V
	C711	QCTA1CH-101	CAPACITOR	100pF,16V
	C712	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C715	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C717	QEKJ1CM-336	E CAPACITOR	33μF,16V
	C719	PU60676-223	E CAPACITOR	0.022μF,5.5V
	C727	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C730	QETC1HM-106	E CAPACITOR	10μF,50V
	C731	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C736	QCFA1EZ-104	CAPACITOR	0.1μF,25V

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	C740	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C750	QCTA1CH-470	CAPACITOR	47pF,16V
△	C901	QFZ9051-683	F CAPACITOR	0.068μF
△	C902	QFZ9051-683	F CAPACITOR	0.068μF
△	C903	QFZ9051-333	F CAPACITOR	0.033μF
	C906	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C907	QCZ0302-330Z	CAPACITOR	33pF
	C908	QFV21HJ-104AZ	F CAPACITOR	0.1μF,50V
	C910	PECA0738-686	E CAPACITOR	
△	C911	QCZ9026-222	CAPACITOR	0.0022μF
	C915	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
	C916	QCBB1HJ-271	CAPACITOR	270pF,50V
	C917	QCZ0212-472	CAPACITOR	0.0047μF,1kV
	C951	QEMR1AM-107	E CAPACITOR	100μF,10V
	C953	QEM91AM-687	E CAPACITOR	680μF,10V
	C954	QEM91CM-827	E CAPACITOR	820μF,16V
	C955	QEMR1EM-187	E CAPACITOR	180μF,25V
	C959	QETC1JM-226	E CAPACITOR	22μF,63V
	C960	QETC1HM-226	E CAPACITOR	22μF,50V
	C961	QFLC1HJ-103Z	F CAPACITOR	0.01μF,50V
	C962	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C963	QETC1AM-107	E CAPACITOR	100μF,10V
	C964	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C965	QETC1AM-107	E CAPACITOR	100μF,10V
	C966	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C969	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
	C971	QETC1AM-227	E CAPACITOR	220μF,10V
	C972	QETC1CM-337	E CAPACITOR	330μF,16V
	C1002	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1004	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1005	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C1006	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C1010	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C1011	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C1052	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1101	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1102	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1103	QCYA1EK-563	CAPACITOR	0.056μF,25V
	C1104	QCTA1CH-101	CAPACITOR	100pF,16V
	C1105	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C1106	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1107	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1108	QCTA1CH-470	CAPACITOR	47pF,16V
	C1109	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1110	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C1111	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C1112	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C1113	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C1114	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C1115	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
	C1116	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1301	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1302	QCTA1CH-820	CAPACITOR	82pF,16V
	C1303	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1304	QCTA1CH-560	CAPACITOR	56pF,16V
	C1305	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C1306	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1307	QCSB1HJ-150	CAPACITOR	15pF,50V
	C1308	QCTA1CH-330	CAPACITOR	33pF,16V
	C1309	QCTA1CH-330	CAPACITOR	33pF,16V
	C1314	QCTA1CH-220	CAPACITOR	22pF,16V
	C1315	QCTA1CH-131	CAPACITOR	130pF,16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1951	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
	C1952	QETC1HM-475	E CAPACITOR	4.7μF,50V
	C1953	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1954	QETC1HM-106	E CAPACITOR	10μF,50V
	L1	PELN0530-101JZ	COIL	100μH
	L2	PELN1203	COIL	
	L3	PU59152-5R6J	COIL	5.6μH
	L4	PELN0530-101JZ	COIL	100μH
	L5	PU59152-820J	COIL	82μH
	L6	PELN0530-101JZ	COIL	100μH
	L7	PU59152-221J	COIL	220μH
	L9	PU59152-101J	COIL	100μH
	L10	PU59152-221J	COIL	220μH
	L11	PELN0975-331JZ	COIL	330μH
	L15	PU59152-1R0J	COIL	1μH
	L16	PU59152-1R0J	COIL	1μH
	L301	PU58308-123J	COIL	12mH
	L703	PU48530-100K	COIL	10μH
	L951	PELN0687	COIL	
	L953	PELN0687	COIL	
	L954	PU48530-101K	COIL	100μH
	L1081	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L1101	PU59152-270J	COIL	27μH
	L1301	PELN0530-101JZ	COIL	100μH
	L1302	PU59152-220J	COIL	22μH
	L1303	PU59152-220J	COIL	22μH
	L1304	PU59152-2R2J	COIL	2.2μH
	L1305	PU59152-330J	COIL	33μH
⚠	CF701	PEVB0594-Z	RESONATOR	
⚠	X1	PEVB0658	CRYSTAL RESONATOR	
⚠	X701	PEVB0422	CRYSTAL RESONATOR	
	K901	PELN0662-Z	FERRATE BEADS	
⚠	PC901	PC123FY2	PH COUPLER	
	PS701	PU61433	REEL SENSOR	
	PS702	PU61433	REEL SENSOR	
⚠	T301	PELN0832	OSC TRANSFORMER	
⚠	T901	PELN1173	SW TRANS	
	T1001	PELN0806	COIL	
	BK1	PQ21944-1-1	TRANS BRACKET	
	ET1	PQ46601	EARTH PLATE	
	HD1	PEME0978	HOLDER	
⚠	HS1	PQ45788-1-1	HEAT SINK	
	OT1	PEME0947-01-01	SPACER,X2 MECH	
	OT2	PEME0979	SPACER,X2 PRE/REC	
	OT3	PQ46408-1-2	SENSOR CAP,X2	
	OT4	SDST3006Z	SCREW	
⚠	TU1	PERF0251-01-01	IF UNIT	
⚠	TU1001	PERF0230	TUNER UNIT	
	W1	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W2	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W3	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W4	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W5	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W6	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W7	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W8	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W9	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W10	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W11	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W12	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W13	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W14	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W15	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W16	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W17	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W18	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W19	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W20	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W21	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W22	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W23	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W24	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W25	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W26	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
⚠	FC901	PEMC0965-Z	FUSE CLIP	
⚠	FC902	PEMC0965-Z	FUSE CLIP	
⚠	LF901	PELN1204	LINE FILTER	
⚠	LF902	PELN0876	LINE FILTER	
	CN1	PEMC1168-013	CONNECTOR,(1-13)PRE/REC	
	CN301	PU60727-7	CONNECTOR,(1-7)AC HEAD	
	CN302	PU60727-2	CONNECTOR,(1-2)FE HEAD	
	CN701	PEMC1077	CONNECTOR,(1-8)CAP MDA	
	CN702	PU61434-1-1	CONNECTOR,(1-5)ROTARY ENCODER	
	CN703	PU60910-2	CONNECTOR,(1-2)LOADING MOTOR	
	CN705	PU59555-4	CONNECTOR,(2-5)SHUTTLE	
	CN751	PEMC0714-008	CONNECTOR,(1-8)PDC/ATS+	
	CN802	PEMC1101-013	CONNECTOR,(1-13)DISPLAY/SW	
⚠	CN901	PU60250-2	CONNECTOR,(1-2)AC IN	
	CN1102	PEMC1101-004	CONNECTOR,(1-4)DRUM MOTOR	
	CN1401	PEMC1168-017	CONNECTOR,(1-17)TERMINAL	
	CN1402	PEMC1168-012	CONNECTOR,(1-12)TERMINAL	
⚠	CP701	ICP-N25	CIRCUIT PROTECTOR	
⚠	CP901	ICP-N20	CIRCUIT PROTECTOR	
⚠	CP902	ICP-N25	CIRCUIT PROTECTOR	
⚠	CP1101	ICP-N15	CIRCUIT PROTECTOR	
⚠	F901	QMF51E2-1R25J1	FUSE	T1.2A

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TERMINAL BOARD ASSEMBLY <06>

PW1	PB10984D	TERMINAL BOARD ASSEMBLY
IC201	BA7630S	IC
IC602	BA15218	IC
	or XRA15218	IC
IC603	BA7631	IC
Q201	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q202	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q203	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q204	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q205	2SA1576(QRS)	TRANSISTOR
	or 2SB1218A(QRS)	TRANSISTOR
Q206	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
Q209	2SD1450S,T	TRANSISTOR
	or 2SD1302(ST)	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
Q1411	2SA1576(QRS)	TRANSISTOR	
	or 2SB1218A(QRS)	TRANSISTOR	
Q1412	2SA933S(QRS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
D201	MTZ12AT-77	ZENER DIODE	
R201	QRD123J-331SX	RESISTOR	330Ω,1/2W
R202	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R203	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R204	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R205	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R206	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R207	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R208	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R209	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
R210	QRD123J-331SX	RESISTOR	330Ω,1/2W
R211	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R212	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R213	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R214	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R215	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R216	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R217	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R218	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R221	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R222	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R226	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R227	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R228	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R229	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R606	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R607	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R608	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R609	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R610	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R611	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R612	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R614	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R615	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R616	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R1411	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R1412	QRD123J-331SX	RESISTOR	330Ω,1/2W
R1413	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R1414	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
C201	QETA0JM-477	E CAPACITOR	470µF,6.3V
C202	QEKJ1CM-476	E CAPACITOR	47µF,16V
C203	QCYA1HK-103	CAPACITOR	0.01µF,50V
C204	QETA1CM-337	E CAPACITOR	330µF,16V
C205	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C206	QCYA1EK-104	CAPACITOR	0.1µF,25V
C207	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C208	QEP61HM-474	NP E CAPACITOR	0.47µF,50V
C209	QEP61HM-105	NP E CAPACITOR	1µF,50V
C210	QEKJ1HM-105	E CAPACITOR	1µF,50V
C211	QETA0JM-477	E CAPACITOR	470µF,6.3V
C212	QCTA1CH-330	CAPACITOR	33pF,16V
C213	QCTA1CH-330	CAPACITOR	33pF,16V
C214	QCTA1CH-330	CAPACITOR	33pF,16V
C215	QCTA1CH-330	CAPACITOR	33pF,16V
C217	QEKJ1CM-476	E CAPACITOR	47µF,16V
C605	QEKJ1CM-106	E CAPACITOR	10µF,16V
C606	QCYA1EK-223	CAPACITOR	0.022µF,25V
C607	QEKJ1CM-106	E CAPACITOR	10µF,16V
C610	QEKJ1CM-106	E CAPACITOR	10µF,16V
C611	QEKJ1CM-476	E CAPACITOR	47µF,16V
C612	QEKJ1CM-476	E CAPACITOR	47µF,16V
C613	QEKJ1CM-476	E CAPACITOR	47µF,16V
C614	QEKJ1CM-106	E CAPACITOR	10µF,16V
C615	QEKJ1CM-106	E CAPACITOR	10µF,16V
C1411	QCYA1HK-681	CAPACITOR	680pF,50V
C1412	QCYA1HK-681	CAPACITOR	680pF,50V
C1413	QCYA1HK-102	CAPACITOR	0.001µF,50V
C1415	QCYA1HK-102	CAPACITOR	0.001µF,50V
C1416	QCYA1HK-681	CAPACITOR	680pF,50V
C1417	QCYA1HK-681	CAPACITOR	680pF,50V
L203	PU59152-1R0J	COIL	1µH
L204	PU59152-1R0J	COIL	1µH
L205	PU59152-1R0J	COIL	1µH
L206	PU59152-1R0J	COIL	1µH
L1411	PU59152-4R7J	COIL	4.7µH
L1412	PU59152-4R7J	COIL	4.7µH
L1413	PU59152-4R7J	COIL	4.7µH
L1414	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
L1415	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
L1416	PU59152-3R3J	COIL	3.3µH
L1417	PU59152-4R7J	COIL	4.7µH
L1418	PU59152-4R7J	COIL	4.7µH
L1420	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
L1421	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
L1422	PU59152-1R0J	COIL	1µH
EQ201	PELN0877	EQUALIZER	
S1411	PESW0695	SLIDE SWITCH,AV2	
ET1	PQ21987	EARTH PLATE,TERMINAL	
TB1	PQ35509E	TERMINAL BOARD ASSY	
OT1	SDSF3008Z	SCREW,X6 TERMINAL BOARD ASSY	
W201	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
W202	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
W203	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
W204	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
W205	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
W206	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
J1411	PEMC1019	RGB21PIN SOCKET,AV1	
J1412	PEMC1019	RGB21PIN SOCKET,AV2	
CN1411	PEMC1167-117	CONNECTOR,(1-17)MAIN	
CN1412	PEMC1167-112	CONNECTOR,(1-12)MAIN	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

PW1	PB40068A-01	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7) MAIN

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SW/DISPLAY BOARD ASSEMBLY <28>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW1	PB10973E1	SW/DISPLAY BOARD ASSEMBLY	
IC1201	UPD16311GC(P)	IC	
	or UPD16311GC(E)	IC	
	or UPD16311GC(K)	IC	
IC1202	SPS-442-1	IR DETECT UNIT	
	or HC-377J	IR DETECT UNIT	
	or GP1U581X	IR DETECT UNIT	
D1201	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1202	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1203	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1204	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1210	RD3.3ES-T1B2	ZENER DIODE	
D1220	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1221	1N4148M	DIODE	
	or 1SS132Y	DIODE	
D1224	1N4148M	DIODE	
	or 1SS132Y	DIODE	
R1201	QRD161J-333	RESISTOR	33kΩ,1/6W
R1202	QRD161J-333	RESISTOR	33kΩ,1/6W
R1203	QRD161J-333	RESISTOR	33kΩ,1/6W
R1204	QRD161J-333	RESISTOR	33kΩ,1/6W
R1205	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R1206	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R1207	QRD161J-102	RESISTOR	1kΩ,1/6W
R1208	QRD161J-563	RESISTOR	56kΩ,1/6W
R1209	QRD161J-103	RESISTOR	10kΩ,1/6W
R1210	QRD161J-103	RESISTOR	10kΩ,1/6W
R1211	QRD161J-103	RESISTOR	10kΩ,1/6W
R1212	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R1225	QRD161J-333	RESISTOR	33kΩ,1/6W
R1226	QRD161J-333	RESISTOR	33kΩ,1/6W
R1227	QRD161J-333	RESISTOR	33kΩ,1/6W
R1228	QRD161J-333	RESISTOR	33kΩ,1/6W
C1201	QETC1CM-336	E CAPACITOR	33μF,16V
C1202	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C1203	QETC1HM-106	E CAPACITOR	10μF,50V
C1204	QCSB1HJ-330	CAPACITOR	33pF,50V
C1205	QCSB1HJ-330	CAPACITOR	33pF,50V
C1206	QETC0JM-227	E CAPACITOR	220μF,6.3V
C1210	QCC11EJ-473	CAPACITOR	0.047μF,25V
C1211	QCC11EJ-473	CAPACITOR	0.047μF,25V
L1201	PU48530-101K	COIL	100μH
S1205	PESW0525-02Z	TACT SWITCH,PAUSE	
S1206	PESW0525-02Z	TACT SWITCH,REC/ITR	
S1207	PESW0525-02Z	TACT SWITCH,PLAY	
S1208	PESW0525-02Z	TACT SWITCH,STOP/EJECT	
S1213	PESW0525-02Z	TACT SWITCH,REVIEW	
DI1201	PEDP0189-02	FLUORESCENT DISPLAY PANEL	
HD2	PQ34668	FDP HOLDER(L)	
HD3	PQ34669	FDP HOLDER(R)	
FW1201	PW30101-60AA442	PARALLEL WIRE,REC SAFETY	
FW1202	PW30101-60AA442	PARALLEL WIRE,CASSETTE SWITCH	
CN1201	PEMC1101-113	CONNECTOR,(1-13)MAIN	
CN1202	PEMC0724-007	CONNECTOR,(1-7)SW/JACK	

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REC SAFETY BOARD ASSEMBLY <32>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW3	PB10973A3	REC SAFETY BOARD ASSEMBLY
S1241	PESW0589	PUSH SWITCH,REC SAFETY SW

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CASSETTE SW BOARD ASSEMBLY <33>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW4	PB10973A4	CASSETTE SWITCH BOARD ASSY
S1242	PU61320	PUSH SWITCH,CASSETTE SWITCH

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SW/JACK BOARD ASSEMBLY <36>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW2	PB10973D2	SW/JACK BOARD ASSEMBLY
S1201	PESW0525-02Z	TACT SWITCH,TV PROG +
S1202	PESW0525-02Z	TACT SWITCH,TV PROG –
S1203	PESW0525-02Z	TACT SWITCH,OPERATE
S1204	PESW0525-02Z	TACT SWITCH,C RESET
S1210	PESW0525-02Z	TACT SWITCH,TIMER
CN1203	PEMC0723-007	CONNECTOR,(1-7)DISPLAY

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PRE/REC BOARD ASSEMBLY <43>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW1	PB10976C	PRE/REC BOARD ASSEMBLY	
SD1	PQ21741-1-5	SHIELD FRAME,PRE	
IC101	HA118295NT	IC	
Q101	2SC4081(QRS)	TRANSISTOR	
	or 2SD1819A(QRS)	TRANSISTOR	
Q102	DTA144WU	TRANSISTOR	
	or UN511E	TRANSISTOR	
Q103	DTC144WU	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q104	2SC4081(QRS)	TRANSISTOR	
	or 2SD1819A(QRS)	TRANSISTOR	
R101	QRSA08J-113YN	RESISTOR	11kΩ,1/10W
R102	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R104	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R105	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R107	QRD161J-182	RESISTOR	1.8kΩ,1/6W
R109	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R110	QRD161J-681	RESISTOR	680Ω,1/6W
C101	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C102	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C103	QCYA1EK-104	CAPACITOR	0.1μF,25V
C104	QER60JM-476	E CAPACITOR	47μF,6.3V
C105	QCYA1EK-473	CAPACITOR	0.047μF,25V
C106	QCYA1HK-272	CAPACITOR	0.0027μF,50V
C107	QCYA1HK-103	CAPACITOR	0.01μF,50V
C110	QCYA1EK-223	CAPACITOR	0.022μF,25V
C111	QCYA1EK-223	CAPACITOR	0.022μF,25V
C112	QCYA1EK-223	CAPACITOR	0.022μF,25V
C113	QCYA1EK-223	CAPACITOR	0.022μF,25V
C114	QCYA1EK-223	CAPACITOR	0.022μF,25V
C118	QCYA1EK-223	CAPACITOR	0.022μF,25V
C120	QCTA1CH-331	CAPACITOR	330pF,16V
C121	QCYA1EK-104	CAPACITOR	0.1μF,25V
C123	QCTA1CH-560	CAPACITOR	56pF,16V
C124	QCTA1CH-560	CAPACITOR	56pF,16V
C125	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
C127	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C129	QCYA1EK-104	CAPACITOR	0.1μF,25V
C130	QCTA1CH-470	CAPACITOR	47pF,16V
L101	PELN0530-101JZ	COIL	100μH
L103	PU59152-181J	COIL	180μH
CN101	PU59973-4	CONNECTOR,(1-4)UPPER DRUM	
CN102	PEMC1167-113	CONNECTOR,(1-13)MAIN	

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PDC BOARD ASSEMBLY <70>

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
PW5	PB10973C5	PDC BOARD ASSEMBLY	
IC1901	MV1822	IC	
Q1901	DTC144ES	TRANSISTOR	
R1902	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R1903	QRD161J-221	RESISTOR	220Ω,1/6W
R1904	QRD161J-221	RESISTOR	220Ω,1/6W
R1908	QRD161J-473	RESISTOR	47kΩ,1/6W
R1909	QRD162J-221	RESISTOR	220Ω,1/6W
C1901	QCSB1HJ-560	CAPACITOR	56pF,50V
C1902	QCSB1HJ-560	CAPACITOR	56pF,50V
C1904	QFV21HJ-184	F CAPACITOR	0.18μF,50V
C1906	QFV21HJ-184	F CAPACITOR	0.18μF,50V
C1908	QCVB1CN-103	CAPACITOR	0.01μF,16V
C1909	QETF1CM-476	E CAPACITOR	47μF,16V
C1914	QFV21HJ-103	F CAPACITOR	0.01μF,50V
C1915	QCSB1HJ-680	CAPACITOR	68pF,50V
LC1901	PU60950-101GZ	N FILTER	
LC1902	PU59736-103	N FILTER	
LC1903	PU60950-101GZ	N FILTER	
LC1904	PU60950-101GZ	N FILTER	
LC1906	PU60950-101GZ	N FILTER	
X1901	PEVB0551	CRYSTAL RESONATOR	
CN1901	PEMC0713-108	CONNECTOR,(1-8)MAIN	
SD1	PU61069-1-2	SHIELD CASE	
SD2	PU61070	SHIELD COVER	
SD3	PU61071	SHIELD PLATE	

SECTION 6
TECHNICAL INFORMATION

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function(IC701) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	S.CURVE	IN	TUNING CHECK
2	AVG FM	IN	AUTO TRACKING DATA(AVRG VOLTAGE OF PB LEVEL INPUT)
3	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
4	6.5H DET	IN	PB SWITCHING POINT ADJUST PUKSE
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	TIMER CLOCK(32.768KHz)
8	X1	-	TIMER CLOCK(32.768KHz)
9	VSS	-	GND
10	OSC1	IN	SYSTEM CLOCK(10MHz)
11	OSC2	OUT	SYSTEM CLOCK(10MHz)
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	LSC	IN	MECHANIZM MODE DETECT(C)
15	LSB	IN	MECHANIZM MODE DETECT(B)
16	LSA	IN	MECHANIZM MODE DETECT(A)
17	C.L.END	IN	CASSETTE TAPE LOAD SWITCH(CASSETTE IN:L)
18	RECSF	IN	REC SAFETY SWITCH DETECT(SW ON:L)
19	STTS	IN	LEADER TAPE DETECT(DETECT ON:L)
20	SECAM DET	-	NC
21	MESECAM DET	IN	MESECAM MODE:H
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
25	SHUTTLE	IN	SHUTTLE SWITCH
26	JSB	IN	JOG PULSE INPUT(B)
27	JSA	IN	JOG PULSE INPUT(A)
28	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/SYSCON:H)
29	LOCK DET	IN	TUNING LOCK CHECK
30	PLL CE	OUT	TUNING CONTROL CHIP ENABLE
31	REC ST	OUT	REC START:H
32	PLL DATA	OUT	TUNING CONTROL SERIAL DATA OUTPUT
33	LCM3	OUT	LOADING MOTOR DRIVE(3)
34	-	-	NC
35	P.MUTE	OUT	PICTURE MUTE CONROL(MUTE ON:L)
36	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
37	B/W	OUT	BLACK/WHITE SWITCH DETECT
38	REC	OUT	REC MODE:H
39	R.PAUSE	IN	REMOTE PAUSE CONTROL(PAUSE ON:L)
40	DOCTOR	IN	DOCTOR PROGRAM DETECT

Table 6-1-1 SYSCON CPU pin function(1/2)

6.1.2 Syscon CPU pin function(IC701) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	EXP DATA2	OUT	EXPANDER IC(IC706) DATA OUTPUT
42	EXP DATA1	OUT	EXPANDER IC(IC705) DATA OUTPUT
43	I2C CLK	OUT	PDC DATA TRANSFER CLOCK
44	I2C DATA	OUT	PDC DATA OUTPUT
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	MODE1/DAV	OUT	MODE1 SELECT
47	MODE2	OUT	MODE2 SELECT
48	FLY ERS	-	NC
49	ENDS	IN	TRAILER TAPE DETECT(DETECT ON:L)
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	SCR IN	IN	SCRAMBLE SIGNAL
52	CTL C/D	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	RAE OUT	OUT	REMOTE PAUSE CONTROL OUTPUT
54	CAP REV	OUT	CAPSTAN MOTOR CONTROL(FWD:H/REV:L)
55	OSD CS	OUT	ON SCREEN IC CHIP SELECT
56	COM-CLOCK	OUT	MEMORY IC DATA TRANSFER CLOCK
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN/FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	H DATA	OUT	VIDEO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	H CLK	OUT	VIDEO IC DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	CH+ DATA	OUT	IIL LOGIC CTL DATA
65	S-DATA	OUT	SERVO IC CONTROL DATA
66	PAUSE(L)	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
67	CTL CLOCK	IN	INDEX CONTROL
68	LCM2	OUT	LOADING MOTOR DRIVE(2)
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	LCM1	OUT	LOADING MOTOR DRIVE(1)
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	AV2/CH+	-	NC
74	SYNC DET	IN	SYNC DET(NO SYNC:H)
75	DRUM V	OUT	DRUM MOTOR VOLTAGE CONTROL
76	CAP V	OUT	CAPSTAN MOTOR VOLTAGE DETECT
77	DV DET	IN	DRUM DRIVE VOLTAGE DET
78	PROTECT	IN	SWD5V/12V DETECT
79	IF AGC	-	NC
80	-	-	NC

Table 6-1-2 SYSCON CPU pin function(1/2)